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Irish River Conservancy.

IN Ireland, outlets for the water issuing from drained land began to be made in 1843, but not much was done until 1846 and 1847, the time of the potato disease. Between that time and the year 1863 more than two and a quarter millions of money were spent in the construction of public works in that country, of which nearly two millions were spent on these outlets for land drainage, or arterial drainage as it has been called. Practically, it is a lowering of the water-level of the outlets of land drainage, to enable the land drains to be laid with a sufficient fall for a sufficient distance from the arterial drains. The area so provided for during those years,—and mostly during the ten or twelve years from 1846 to 1857,—was 266,391 acres, statute measure. The average cost per acre was 6*l.* 17s., and there was, of course, the cost of the land drains besides. This land drainage is called, in Ireland, "thorough" drainage, and is distinct from the subject of arterial drainage, of which we now desire to say something, the basis of which is the Appendix to the First Report of the Royal Commission on Irish Public Works, which contains the evidence given before the Commissioners who sat on forty-three days between October, 1886, and April, 1887. The Appendix is accompanied by a map on the scale of ten miles to the inch. There have been three systems or orders of procedure under which the arterial drainage of Ireland has hitherto been undertaken. Under the first, constituted by an Act of Parliament in 1831, landed proprietors were enabled to form themselves into joint-stock companies, and to proceed with the execution of drainage works without the intervention of other Acts of Parliament, and by private agency and with private funds to execute the works. Little practical result, however, followed this measure, and Parliament endeavoured to find some more effectual means for the attainment of the object by an Act passed in 1842, which provided that the works might be carried out by the Government on the application of owners of land in any district of the country. It was not necessary that all the owners, in a district desired to be drained, should make the application, or should agree to the work being done, but Government took action on the application of the owners of two-thirds in value of the lands proposed to be provided with proper outlets for the drainage, whereupon the works were carried out by the Commissioners of Public Works in Ireland, or the Irish Board of Works, as they are more commonly called, under the superintendence of engineers appointed by that Board. It was intended by this Act that private funds should still bear the chief part of the expense of the works, but it did not exclude the Government from being one of the subscribers, on the security of the improved value of the land. On the undertaking being completed in any district so drained the expense was apportioned on the lands benefited, according to the benefit conferred; but during the next three years drainage works progressed slowly, and it was not until the famine years, to which we have made reference, that serious attention was given to the subject. There then ensued a demand that means should be found for the employment of labour to alleviate the wide distress. If such means were to be supplied by the Government, it was thought desirable that it should be by way of employment on reproductive works, and the choice fell on arterial drainage. With a view of meeting the urgency of the case the Government obtained fresh Parliamentary powers in 1846, which enabled the Irish Board of Works to proceed with works of this kind on its own responsibility, with the consent of the proprietors of but one-half in value in any district proposed to be drained. These works were then largely proceeded with, the Government lending the money; but, when the famine was over, the Government became alarmed at the outlay, and directed every exertion to be made to close the works, and return to the ordinary procedure under the Act of 1842. Complaints were made by the landed proprietors that, in order to find work for labourers, schemes had been forced upon them. By an Act passed in 1853, special Commissioners were appointed to inquire into these complaints, who recommended extensive remissions to be made, and in 1859 the amount so remitted, out of the total outlay of 1,827,068*l.*, was 906,786*l.*, or nearly one half. Whether that was satisfactory to the Irish landowners we do not know, but it seems to have had the effect of stopping further supplies from the Imperial Exchequer on that system of carrying out the work; for, after 1857, nothing seems to have been done until 1863, when an Act of Parliament was passed which relieved the Government of the responsibility of executing any works through the instrumentality of the Irish Board of Works, and by the engineers appointed by that Board. The aim of this Act was to leave the initiation of arterial drainage entirely to proprietors, and to enable them to carry out works with less interference, but offering them the advice and experience of the Board of Works and its engineers, and the assistance of loans of money. Before we say anything of this new arrangement, however, we may say that the amount (1,827,068*l.*) was expended on 119 districts, the average area of which is 2,239 acres, the average cost per acre,—the acre being in all cases herein referred to the statute measure,—was 6*l.* 17s., but in three of these districts, comprising 41,000 acres of drained land, the drains were made navigable, and in these cases the average cost per acre was 7*l.* 15s., or less than 1*l.* above the average cost of drains not navigable. It must be said, however, that these were not new cuts; they were, for the most part, navigable waterways already, and what was done in them was of the nature of improvement only. In the case of a new cut, the difference between the cost of what would be necessary for drainage only, and that which would be necessary if navigation were provided also, would probably be greater than it appears from these figures, in the first instance; but in the long run it would, nevertheless, be found probably the more economical of the two. The average expenditure on each of these districts was 15,354*l.*, but on each of four of them it exceeded 100,000*l.*, and the average cost per acre of these four was 8*l.* 8s. The total area of the four districts is 57,166 acres, and the total expenditure upon them 481,911*l.*

Going from this largest class of drainage districts to those upon which more than 20,000*l.*, but less than 70,000*l.* was expended upon each, there were, of these, twenty-one, comprising an area of 108,211 acres, and upon which 808,385*l.* were expended, the cost per acre being 7*l.* 9s. Then there are thirty-one districts upon which less than 20,000*l.*, but more than 5,000*l.*, were expended on each, the total area of which is 65,653 acres, and the expenditure 331,431*l.*, the average being 5*l.* 1s. per acre. The smallest class of districts, those upon which less than 5,000*l.* were expended on any one district, are sixty-three in number, comprising 31,377 acres of drained land, at a cost of 122,564*l.*, or an average of 3*l.* 18s. per acre.

These were the works and this was the cost of draining the 119 districts under the conditions of the Acts of 1842 and 1846, and of which the landowners complained, although the annual improved value of the 266,391 acres of drained land was 74,502*l.*, and the average return per annum of the 1,827,068*l.* expended was over 4 per cent., and, if the remission which was made by the Government of 906,786*l.* be allowed for, the average return per annum must have been over 8 per cent. However, works were practically suspended after the famine time, but the importance of providing further means for arterial drainage forced itself on the attention of Government, and in 1863 another Act was passed, which was amended from time to time at the instance of the Commissioners of Public Works in Ireland, with the view of extending the advantages of the Act of 1863. Under these several statutes the first step which proprietors of lands had to take was to send to the Irish Board of Works a statement of their requirements, accompanied by plans and estimates, duplicate documents being exhibited in the district and notices sent to the local newspapers and to all persons concerned, in order that objections, if any, might be lodged with the promoters. The Board of Works then instructed an Inspector to hold an inquiry in the district, hear objections, and revise the estimate if necessary. The Inspector was not an officer of the Board, or for whom the Board were responsible except as to his competency. He was appointed by them as occasion required. Mr. Roberts, who now is one of the Commissioners of the Board, was largely employed. Mr. Kelly, who had successfully carried out many of the former drainage works, was another who was often employed as an Inspector, and subsequently Mr. Kane was employed.

The report of the Inspector was sent to the Board of Works, and copies were furnished to the proprietors, who were again given an opportunity of objecting to the scheme. If objections were made and were satisfactorily disposed of, and if the Commissioners of the Board of Works saw no glaring defects in the scheme, they proceeded, on receiving the requisite assent of the proprietors of two-thirds in value of the land, to make a Provisional Order, constituting the area into a drainage district, and in due course obtained an Act of Parliament confirming the order. The Local Board, which had already been formed in the locality, called the Drainage Board, were then in a position to commence the works, and to borrow the necessary money from the Board of Works. In 1878 an alteration was made in respect of the number of proprietors from whom assent was required before works could be proceeded with. In this year it was enacted that a drainage district might be formed upon the assents of owners of only one-half of the land in a district, unless the owners of one-third of the land actually dissented. In 1880, power was given for the Drainage Board to borrow money from the Board of Works for works outside their district. In 1886 an important innovation was introduced by the House of Commons into a private Act, by a clause which provided that the Drainage Board should include a certain number of representatives of the occupiers of land in the district.

Thus, the Act of 1863 introduced a different system or order of procedure, which, in the main, has been followed to the present time. Under it a sum of 504,598*l.* has been expended in forty-two districts, comprising an area of 78,828 acres of drained land, or at any rate drained or otherwise improved by arterial drainage, the average cost of the drainage works being 6*l.* 8s. per acre of land drained or otherwise improved by the arterial drainage. The average return per cent. per annum upon this outlay has been 4*l.* 16s., the total improved annual value being 24,225*l.* Under the Act of 1863 and subsequent Acts there have been only two districts on which more than 70,000*l.* has been spent on each, viz., 162,976*l.* on the two, comprising an area of 20,540 acres of drained land, the mean cost per acre being 7*l.* 19s. nearly. Then there are three districts where in each the expenditure was over 20,000*l.*, but under 70,000*l.* These contain 8,300 acres, and the outlay has been 87,613*l.*, or an average of 10*l.* 11s. per acre. The return per cent. per annum is 3*l.* 11s. The next scale of expenditure, viz., over 5,000*l.* but under 20,000*l.*, is one under which the cost per acre is less and the return on the outlay greater than in either of the other cases. On this scale twenty-one districts have been drained, comprising an area of 37,223 acres, the expenditure upon which has been 206,527*l.*, being an average of 5*l.* 11s. per acre. The return is 5*l.* 18s. per cent. nearly. On the smallest scale of expenditure, viz., under 5,000*l.* in each district, 12,765 acres have been drained at a cost of 47,481*l.*, or at the small average of 3*l.* 15s. per acre, the return per cent. being 6*l.* 11s.

The cost of districts at present under construction, or, rather, which were so at the date of the report,—April, 1887,—is estimated at 233,000*l.*, the area of these districts to be improved is 52,850 acres, and the increased value is estimated at 15,850*l.* per annum. The average annual return on the whole expenditure since 1863 is 4*l.* 16s. on every 100*l.*

The country is divided, in a memorandum by Sir John Ball Greene, into areas, as follow:—

	Statute acres.
Arable and pasture land	15,357,856
Woods and plantations............	339,849
Rivers and lakes......................	627,761
Bog, moor, and mountain	4,497,024
	20,822,490

Or the areas may be taken under different elevations, as follow:—

			Statute acres.
Not exceeding 250 ft. above the sea level			8,500,000
From 250 ft. to 500 ft.	„	„	7,500,000
„ 500 „ 1,000 ft.	„	„	3,750,000
„ 1,000 „ 2,000 ft.	„	„	1,020,000
Over 2,000 ft.			52,490
			20,822,490

In calling witnesses on the question of arterial drainage, the Commissioners,—who, by the bye, are now sitting on other questions connected with Irish Public Works,—addressed to them, before they appeared, the following heads of evidence, as suggestive of the information desired:—

As to the importance of arterial drainage to Ireland.

The amount of work remaining to be carried out.

How far has advantage been taken of the facilities for promoting arterial drainage afforded by the Act of 1842 and the Act of 1863?

What causes have prevented a more complete adoption of these Acts?

What changes in the law are needed in order that districts still requiring drainage may be relieved?

Whether the charges should be direct on occupiers, and whether a Drainage Board should be elected by occupiers as well as owners?

Whether part of the charges should be borne by towns, if any, in any district proposed to be drained, and whether all the land in a river basin should be made to contribute?

The advisability, as has been suggested, of the Government taking the initiative, or giving special help in the formation of drainage districts.

What precautions should be taken to prevent drainage districts being formed in such a way as to injuriously affect other districts, either by omissions of areas which ought, for physical reasons, to be included with them, or by direct injury in the way of increased floods?

Maintenance of arterial drainage works when complete.

Navigation: its advantages to adjacent land, to neighbouring towns, and to the surrounding district.

To most of these suggested questions the Commissioners received answers in full from one or other of the fifty-three witnesses they examined, together with evidence on questions not touched upon in the suggestions. It may be seen that the cost per acre is greater in the large districts than in the small ones. The large districts include a greater proportion of the main outfall works than those of smaller area do. The efficiency and completeness of a large area are much superior to those of small areas; but, as the cost per acre of the land benefited is greater in the larger district, there is no encouragement to attain the best efficiency the case admits of, and the solution of the difficulty lies in the formation of each natural watershed area or river basin into one district, under a Conservancy Board, with power to charge upon all lands within its area, not an equal rate, but one varying with the respective positions of different parts of the area, so that those most benefited would be charged at the highest rate, and those most remote, and receiving the least benefit, at the smallest rate. In these remote parts of a conservancy district the direct benefit is not perceptible, but there is no doubt they are liable to contribute on other grounds, and so that the gradation be properly made there would be no injustice in including them as parts of the contributory area in every river basin. The Commissioners of the River Conservancy which comprehends this area would undertake the main outfall works, and the charge per acre for arterial drainage in large districts would then be no greater,—perhaps less,—than it has been in small ones.

A PUGIN STUDENT'S DRAWINGS.

A GREAT many good and interesting sketches have been produced under the incitement of the Pugin Studentship of the Institute of Architects, but we do not remember that any other Pugin Student has brought out his drawings and sketches in so sumptuous a form as the folio volume[*] in which Mr. Washington Browne has collected a number of the drawings for which the Studentship was awarded him in 1878, and of those which were made while travelling in fulfilment of the conditions of the studentship. The book is a volume *de luxe*, of which only two hundred copies have been printed; and though it is not necessary to the architectural value of the drawings that they should be published in so costly a form, and it may not be convenient to everyone to do so, the fact of collection and publication is in itself an example worth following by others, for a set of carefully-measured drawings or carefully-studied sketches of buildings of interest may have a permanent value, and it is a pity they should be shown for a few days on the Institute walls only to disappear again. Of course, it is desirable in such a case to make a judicious selection, and not to publish drawings, however good, of works which have been very often drawn and published, or from the same district which others may have previously selected for illustration. In this respect, however, no exception can be taken to Mr. Browne's selection. It deals a great deal with Scotch Mediæval remains, which have been by no means over-illustrated, and the English works illustrated are, with a few exceptions, not in a very beaten track.

The illustrations in the book are of two classes, ordinary photolithographs from pen drawings, and "Licht-druck" reproductions from pencil drawings. Most of the perspective sketches are by this latter process, which is very successful in the reproduction of pencil drawing. One of the first plates, however, is a geometrical drawing in pencil of a very interesting bit of work at St. Andrew's, an arcade in the approach from the cloister to the chapter-house; a very bold piece of what Mr. Browne calls Transitional work, but which has the characteristics of Early English (in this case we should say early Scotch) pretty well developed, except a certain squareness about the archivolt sections. The arcade is backed by a modern brick wall, against which the sturdy Gothic work shows up very effectively; but we should almost have preferred a perspective sketch of this bit to an elevation and plan. A perspective sketch of the College Church, with its tall plain saddle-back pinnacles, is another of the St. Andrew's illustrations. A geometrical drawing of part of the remains of the Abbey of Aberbrothock, on plate 6, shows an instance of a circular-headed doorway in close contiguity with pointed arches of the same date, a peculiarity also shown in the bit from St. Andrew's just before mentioned. This mingling of round and pointed arches in the same story of a building seems rather characteristic of Scotch Gothic, and one is led to the conclusion that there was a preference for the round-arched form for a door, perhaps for purely practical reasons, as giving wider headway, for in both these two examples it is the doorway only that is round-arched. That remarkable bit of Scotch castellated work, Rowallan Castle, in Ayrshire, is the subject of a neat pencil sketch on plate 7; we have never visited it, but a photograph of it which is before us gives a very different idea of the expression of the building from that conveyed by this daintily-touched pencil sketch;

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[*] Pugin Studentship Drawings: being a selection from sketches, measured drawings, and details of domestic and ecclesiastical buildings in England and Scotland, drawn while Pugin Travelling Student of the Royal Institute of British Architects in 1878, together with a number of the drawings for which the Studentship of that year was awarded. By G. Washington Browne, Architect. David Douglas, Edinburgh. 1887.

the outlines are the same, but the stern expression is lost in the outline sketch. The castle, or the portion shown, is dated 1562, a date which accords with the details of interior doors given on the same plate, but not (to the "Southron" mind) with the exterior of the building itself, which stands as an outward or visible sign of the longer duration in Scotland of the fiercer type of feudalism which had at this time pretty nearly died out in England. There is, perhaps, not in all Great Britain a more characteristic bit of building than Rowallan. Compare that with the (in its way) equally characteristic manor house of Ockwells, Berks, very fully illustrated in a series of measured drawings (plates 10 to 12); this is a century earlier than Rowallan; but what a contrast between the stern northern castle and the quiet-looking domestic southern English dwelling-house. The two are eloquent of the respective social states of the two countries at the time.

One of the most interesting portions of the collection is the series of very careful measured drawings (plates 48 to 57), devoted to the illustration of New Abbey or Sweetheart, a few miles from Dumfries, the latter *alias* arising from a legend as to an embalmed heart preserved there. This ruined abbey was well worth such careful illustration, both on account of its powerful and grand style of work and its many interesting peculiarities of detail. Newark Castle is carefully illustrated, with plans and geometrical drawings. Various pencil sketches of Scotch work,—old houses in Paisley and elsewhere; the west end of Paisley Abbey, with a fine and rather unusual arrangement of traceried windows; views of Glamis Castle, Midmar Castle, and others; details from Jedburgh Abbey; these and many others are of great interest, and charming to look at.

In the larger pen-drawn geometrical drawings, Mr. Browne gives us clear, strong-lined, and what may be called business like, drawing, but the strongly-ruled joints across the masonry, and the thick lines generally, give a somewhat mechanical appearance to this portion of the drawings; and the throwing back of the portions on a more distant plane, as in the elevation from Dryburgh Abbey (plate 15), by vertically-ruled shading lines, is still more mechanical, and a device in architectural draughtsmanship that is, to say the least, not worth the trouble it gives; besides, it crowds up the surface of the paper and interferes with the clearness of the actual construction lines (especially curvilinear arch lines) which have to cut through all this ruling. For pencil-drawing the author's touch and style is charming. Occasionally we find a certain now fashionable trick of effect with draughtsmen carried a little too far,—that of stopping or interrupting lines and leaving the eye to carry them on in imagination. This is to a certain extent a legitimate source of effect, and it is in accordance with the actual effect of moulding lines, on old buildings especially, under varying gradations of light; but when we see the cornice of the circular tower at Falkland Palace (plate 24) completely omitted in the middle portion, as if it had dropped out (which we do not imagine is what is intended to be conveyed), one is tempted to ask whether it is not rather a too easy mode of sketching to draw only the beginning and end of a set of curves, and leave the rest to imagination. There seems also to be a disposition among the modern school of draughtsmen to be less particular about perpendicularity than formerly. In the sketch of Pends Priory Gate (plate 5) the arcade above the gateway is falling backwards; in that of Dunblane (plate 19) the clearstory windows are tumbling in. The comparison of the two leads to the conclusion that this is a licence of sketching, not a representation of fact. We used to think it was a special characteristic of ladies' architectural sketching that their buildings are not upright. Architects should be more careful.

The Suggested Board of Forestry.—The report of the Select Committee on Forestry has been issued. The Committee recommends the establishment of a Board of Forestry, presided over by a responsible Government official.

NOTES.

THE Midland Railway strike does not seem to be turning out so serious a matter for the company and for the public as it was at first feared that it would. We must confess that we regarded with considerable apprehension the statement that fresh hands were being taken on from other railways to act as drivers, seeing that to learn the signal system of a great line is no easy matter, and that it is generally understood that all drivers go through a probation of learning the road, in the capacity of stokers or otherwise, before they are allowed to drive on it; and we "attended ourselves," as the French put it, to a serious accident from some mistake of a driver unfamiliar with the road. It says much for the pains and care exercised by the officials in charge and their new helpers that nothing of the sort has occurred. With regard to the matter in dispute between the Company and the men, it appears to us that the Company are in the right. We are told by those who ought to know that the men, even under the new system proposed, would be paid better than those of any other railway in the world. The kind of complaint which the men make is represented in what was said to us by a passenger driver on the Midland (not a striker), that if he went from Liverpool to London and back with a "special" he would be so situated that he would not be able to take his turn next day, according to the rules, but must make only five days that week. This, however, is surely a matter that could be easily arranged by a scale of pay for distance run. Knowing what is the average proportion of willing workers and unwilling workers among mankind, and remembering that even engine-drivers are but human, we should expect that a system ensuring a week's pay, whether the usual amount of running was done or not, would infallibly be taken advantage of by the less worthy and diligent men whenever a chance occurred, and that to the detriment of the hard-working and willing men; and it must be remembered that the work of a great line cannot be carried on well without a strict disciplinary system, and what is now proposed by the Company is only the system in existence on most of the other great lines in England. We fear the men are in the wrong in the general demand, and there is no question that those who thought proper to pull up their trains at a given time and desert them are flagrantly to blame, and that the Company are quite right in their positive refusal to re-engage any man who had neglected his obvious duty, not only to his employers but to the public, in such a manner. It is the case of a sentinel deserting his post.

ON Monday last was issued a supplementary estimate for 363,799*l*. in connexion with the Civil Service and Revenue Department. Amongst the payments is one of 256,000*l*. to the Local Government Board for certain disturnpiked and main roads in England and Wales; and one of 8,000*l*. to Messrs. Leeming & Leeming, architects, "in full satisfaction of their claims upon her Majesty's Government in connexion with the preparation of plans for the erection of new offices for the Admiralty and War Departments." The taxpayer is hereby reminded that the scheme for fresh buildings over the Spring-gardens and Whitehall sites is for a while in abeyance. A grant in aid of 2,000*l*. to the Victoria University is also included in this estimate. There are also grants of 4,000*l*. in aid of cost of site of the new hall for Edinburgh University; and of 2,230*l*. for buildings at the Royal University, Ireland. A fair pecuniary justice seems to have been done to Messrs. Leeming & Leeming, provided they had not made working drawings for the new building; and we presume matters had not gone so far as that. Most of those who are interested in architecture will be glad to hear that their commonplace design is shelved; and it is to be hoped that public opinion may still be stirred up to protest against the miserable economy which recommends a piece of cheap patchwork for the War and Admiralty Offices, instead of a building worthy of the nation.

THE fire at Whiteley's has once more frightened people about the safety of London in the admittedly improbable event of two great fires taking place on the same night. Practically, the whole available fire engine force was concentrated on one conflagration, and though London is not now the combustible town which it was when the Great Fire occurred, there might be an unpleasantly near chance of something like a great fire establishing itself some night if two "Whiteley's" took to burning simultaneously. The question is partly one of rates, of course, and those who grumble just after a great fire because there are not enough fire-engines, would probably grumble equally at being double-rated for a fire service of double efficiency. There is, perhaps, another practical difficulty apart from this, in the fact that, however great may be the demands occasionally made on the fire-brigade, they are few and far between; and there is a not unnatural feeling as to the waste of *matériel* and *personnel* which would be incurred in keeping up a much larger force of men, engines, and horses, which would be for far the great majority of their time standing idle. If any system could be developed by which extra men could be trained and engaged, to be called out only when urgently needed, and to be at liberty to work at their own occupations in the meantime, on the understanding that they should be within a certain radius of the station, and so as to be easily summoned (which, if we mistake not, is the actual system now pursued in the lifeboat service), there would seem to be the best chance by such a system of squaring efficiency with economy, and not keeping men about as idlers: this latter necessity being in itself objectionable on other grounds than those of economy.

AS usual, a large fire brings out the stereotyped queries, "Why is not everything fireproof?" and Earl Wemyss writes to the *Times* to ask why Whiteley's and all other buildings are not built with Brannon's fireproof covering to the timbers, which by this system are encased in a fibrous, non-combustible concrete. These things are not so easy and obvious as Earl Wemyss supposes. The question of increased cost would be very considerable, which Earl Wemyss would probably recognise if he had to erect a large building at his own cost; but there is the further question, which does not occur to amateur correspondents on these matters, What is the wood doing all the while under this concrete shroud? Wood is a material the behaviour of which requires looking after, and the man who puts his faith in coating the structural timbers of a roof with concrete might be disagreeably surprised some day to find that a rotten tie-beam or strut let the roof down over his head.

IN a letter to the *Times* of Tuesday, Mr. W. H. Gregory makes a protest in regard to the condition of the National Portrait Gallery and the South Kensington Museum. The erection of an adequate and worthy building for the National Portrait Gallery is the main object of his letter, but the completion of the South Kensington Museum building, which Mr. Gregory only treats as an accessory matter, seems to us by far the most important matter of the two, and the one of most public and artistic interest. The fact is the National Portrait Gallery has never been an object of high interest to the cultivated portion of the public, on account of the very fact which Mr. Gregory emphasises, that it is not an art collection, and the pictures composing it are not bought from artistic considerations; and the dull and uninteresting aspect of a collection of mostly second-rate and third-rate paintings cannot be much atoned for by the consideration that the subjects of all the paintings are of more or less historical interest. Few visitors were ever found in the National Portrait Gallery when it was in the dangerous but more accessible "sheds" in the Exhibition-

and in 1863 another Act was passed, which was amended from time to time at the instance of the Commissioners of Public Works in Ireland, with the view of extending the advantages of the Act of 1863. Under these several statutes the first step which proprietors of lands had to take was to send to the Irish Board of Works a statement of their requirements, accompanied by plans and estimates, duplicate documents being exhibited in the district and notices sent to the local newspapers and to all persons concerned, in order that objections, if any, might be lodged with the promoters. The Board of Works then instructed an Inspector to hold an inquiry in the district, hear objections, and revise the estimate if necessary. The Inspector was not an officer of the Board, or for whom the Board were responsible except as to his competency. He was appointed by them as occasion required. Mr. Roberts, who now is one of the Commissioners of the Board, was largely employed. Mr. Kelly, who had successfully carried out many of the former drainage works, was another who was often employed as an Inspector, and subsequently Mr. Kane was employed.

The report of the Inspector was sent to the Board of Works, and copies were furnished to the proprietors, who were again given an opportunity of objecting to the scheme. If objections were made and were satisfactorily disposed of, and if the Commissioners of the Board of Works saw no glaring defects in the scheme, they proceeded, on receiving the requisite assent of the proprietors of two-thirds in value of the land, to make a Provisional Order, constituting the area into a drainage district, and in due course obtained an Act of Parliament confirming the order. The Local Board, which had already been formed in the locality, called the Drainage Board, were then in a position to commence the works, and to borrow the necessary money from the Board of Works. In 1878 an alteration was made in respect of the number of proprietors from whom assent was required before works could be proceeded with. In this year it was enacted that a drainage district might be formed upon the assents of owners of only one-half of the land in a district, unless the owners of one-third of the land actually dissented. In 1880, power was given for the Drainage Board to borrow money from the Board of Works for works outside their district. In 1886 an important innovation was introduced by the House of Commons into a private Act, by a clause which provided that the Drainage Board should include a certain number of representatives of the occupiers of land in the district.

Thus, the Act of 1863 introduced a different system or order of procedure, which, in the main, has been followed to the present time. Under it a sum of 504,598*l.* has been expended in forty-two districts, comprising an area of 78,828 acres of drained land, or at any rate drained or otherwise improved by arterial drainage, the average cost of the drainage works being 6*l.* 8s. per acre of land drained or otherwise improved by the arterial drainage. The average return per cent. per annum upon this outlay has been 4*l.* 16s., the total improved annual value being 24,225*l.* Under the Act of 1863 and subsequent Acts there have been only two districts on which more than 70,000*l.* has been spent on each, viz., 162,976*l.* on the two, comprising an area of 20,540 acres of drained land, the mean cost per acre being 7*l.* 19s. nearly. Then there are three districts where in each the expenditure was over 20,000*l.*, but under 70,000*l.* These contain 8,300 acres, and the outlay has been 87,613*l.*, or an average of 10*l.* 11s. per acre. The return per cent. per annum is 3*l.* 11s. The next scale of expenditure, viz., over 5,000*l.* but under 20,000*l.*, is one under which the cost per acre is less and the return on the outlay greater than in either of the other cases. On this scale twenty-one districts have been drained, comprising an area of 37,223 acres, the expenditure upon which has been 206,527*l.*, being an average of 5*l.* 11s. per acre. The return is 5*l.* 18s. per cent. nearly. On the smallest scale of expenditure, viz., under 5,000*l.* in each district, 12,765 acres have been drained at a cost of 47,481*l.*, or at the small average of 3*l.* 15s. per acre, the return per cent. being 6*l.* 11s.

The cost of districts at present under construction, or, rather, which were so at the date of the report,—April, 1887,—is estimated at 233,000*l.*, the area of these districts to be improved is 52,850 acres, and the increased value is estimated at 15,850*l.* per annum. The average annual return on the whole expenditure since 1863 is 4*l.* 16s. on every 100*l.*

The country is divided, in a memorandum by Sir John Ball Greene, into areas, as follow:—

	Statute acres.
Arable and pasture land	15,357,856
Woods and plantations............	339,849
Rivers and lakes......................	627,761
Bog, moor, and mountain	4,497,024
	20,822,490

Or the areas may be taken under different elevations, as follow:—

	Statute acres.
Not exceeding 250 ft. above the sea level	8,500,000
From 250 ft. to 500 ft. ,, ,,	7,500,000
,, 500 ,, 1,000 ft. ,, ,,	3,750,000
,, 1,000 ,, 2,000 ft. ,, ,,	1,020,000
Over 2,000 ft.	52,490
	20,822,490

In calling witnesses on the question of arterial drainage, the Commissioners,—who, by the bye, are now sitting on other questions connected with Irish Public Works,—addressed to them, before they appeared, the following heads of evidence, as suggestive of the information desired:—

As to the importance of arterial drainage to Ireland.

The amount of work remaining to be carried out.

How far has advantage been taken of the facilities for promoting arterial drainage afforded by the Act of 1842 and the Act of 1863?

What causes have prevented a more complete adoption of these Acts?

What changes in the law are needed in order that districts still requiring drainage may be relieved?

Whether the charges should be direct on occupiers, and whether a Drainage Board should be elected by occupiers as well as owners?

Whether part of the charges should be borne by towns, if any, in any district proposed to be drained, and whether all the land in a river basin should be made to contribute?

The advisability, as has been suggested, of the Government taking the initiative, or giving special help in the formation of drainage districts.

What precautions should be taken to prevent drainage districts being formed in such a way as to injuriously affect other districts, either by omissions of areas which ought, for physical reasons, to be included with them, or by direct injury in the way of increased floods?

Maintenance of arterial drainage works when complete.

Navigation: its advantages to adjacent land, to neighbouring towns, and to the surrounding district.

To most of these suggested questions the Commissioners received answers in full from one or other of the fifty-three witnesses they examined, together with evidence on questions not touched upon in the suggestions. It may be seen that the cost per acre is greater in the large districts than in the small ones. The large districts include a greater proportion of the main outfall works than those of smaller area do. The efficiency and completeness of a large area are much superior to those of small areas; but, as the cost per acre of the land benefited is greater in the larger district, there is no encouragement to attain the best efficiency the case admits of, and the solution of the difficulty lies in the formation of each natural watershed area or river basin into one district, under a Conservancy Board, with power to charge upon all lands within its area, not an equal rate, but one varying with the respective positions of different parts of the area, so that those most benefited would be charged at the highest rate, and those most remote, and receiving the least benefit, at the smallest rate. In these remote parts of a conservancy district the direct benefit is not perceptible, but there is no doubt they are liable to contribute on other grounds, and so that the gradation be properly made there would be no injustice in including them as parts of the contributory area in every river basin. The Commissioners of the River Conservancy which comprehends this area would undertake the main outfall works, and the charge per acre for arterial drainage in large districts would then be no greater,—perhaps less,—than it has been in small ones.

A PUGIN STUDENT'S DRAWINGS.

A GREAT many good and interesting sketches have been produced under the incitement of the Pugin Studentship of the Institute of Architects, but we do not remember that any other Pugin Student has brought out his drawings and sketches in so sumptuous a form as the folio volume* in which Mr. Washington Browne has collected a number of the drawings for which the Studentship was awarded him in 1878, and of those which were made while travelling in fulfilment of the conditions of the studentship. The book is a volume *de luxe*, of which only two hundred copies have been printed; and though it is not necessary to the architectural value of the drawings that they should be published in so costly a form, and it may not be convenient to everyone to do so, the fact of collection and publication is in itself an example worth following by others, for a set of carefully-measured drawings or carefully-studied sketches of buildings of interest may have a permanent value, and it is a pity they should be shown for a few days on the Institute walls only to disappear again. Of course, it is desirable in such a case to make a judicious selection, and not to publish drawings, however good, of works which have been very often drawn and published, or from the same district which others may have previously selected for illustration. In this respect, however, no exception can be taken to Mr. Browne's selection. It deals a great deal with Scotch Mediæval remains, which have been by no means over-illustrated, and the English works illustrated are, with a few exceptions, not in a very beaten track.

The illustrations in the book are of two classes, ordinary photolithographs from pen drawings, and "Licht-druck" reproductions from pencil drawings. Most of the perspective sketches are by this latter process, which is very successful in the reproduction of pencil drawing. One of the first plates, however, is a geometrical drawing in pencil of a very interesting bit of work at St. Andrew's, an arcade in the approach from the cloister to the chapter-house; a very bold piece of what Mr. Browne calls Transitional work, but which has the characteristics of Early English (in this case we should say early Scotch) pretty well developed, except a certain squareness about the archivolt sections. The arcade is backed by a modern brick wall, against which the sturdy Gothic work shows up very effectively; but we should almost have preferred a perspective sketch of this bit to an elevation and plan. A perspective sketch of the College Church, with its tall plain saddle-back pinnacles, is another of the St. Andrew's illustrations. A geometrical drawing of part of the remains of the Abbey of Aberbrothock, on plate 6, shows an instance of a circular-headed doorway in close contiguity with pointed arches of the same date, a peculiarity also shown in the bit from St. Andrew's just before mentioned. This mingling of round and pointed arches in the same story of a building seems rather characteristic of Scotch Gothic, and one is led to the conclusion that there was a preference for the round-arched form for a door, perhaps for purely practical reasons, as giving wider headway, for in both these two examples it is the doorway only that is round-arched. That remarkable bit of Scotch castellated work, Rowallan Castle, in Ayrshire, is the subject of a neat pencil sketch on plate 7; we have never visited it, but a photograph of it which is before us gives a very different idea of the expression of the building from that conveyed by this daintily-touched pencil sketch;

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* Pugin Studentship Drawings: being a selection from sketches, measured drawings, and details of domestic and ecclesiastical buildings in England and Scotland, drawn while Pugin Travelling Student of the Royal Institute of British Architects in 1878, together with a number of the drawings for which the Studentship of that year was awarded. By G. Washington Browne, Architect. David Douglas, Edinburgh. 1887.

the outlines are the same, but the stern expression is lost in the outline sketch. The castle, or the portion shown, is dated 1562, a date which accords with the details of interior doors given on the same plate, but not (to the "Southron" mind) with the exterior of the building itself, which stands as an outward or visible sign of the longer duration in Scotland of the fiercer type of feudalism which had at this time pretty nearly died out in England. There is, perhaps, not in all Great Britain a more characteristic bit of building than Rowallan. Compare that with the (in its way) equally characteristic manor house of Ockwells, Berks, very fully illustrated in a series of measured drawings (plates 10 to 12); this is a century earlier than Rowallan; but what a contrast between the stern northern castle and the quiet-looking domestic southern English dwelling-house. The two are eloquent of the respective social states of the two countries at the time.

One of the most interesting portions of the collection is the series of very careful measured drawings (plates 48 to 57), devoted to the illustration of New Abbey or Sweetheart, a few miles from Dumfries, the latter *alias* arising from a legend as to an embalmed heart preserved there. This ruined abbey was well worth such careful illustration, both on account of its powerful and grand style of work and its many interesting peculiarities of detail. Newark Castle is carefully illustrated, with plans and geometrical drawings. Various pencil sketches of Scotch work,—old houses in Paisley and elsewhere; the west end of Paisley Abbey, with a fine and rather unusual arrangement of traceried windows; views of Glamis Castle, Midmar Castle, and others; details from Jedburgh Abbey; these and many others are of great interest, and charming to look at.

In the larger pen-drawn geometrical drawings, Mr. Browne gives us clear, strong-lined, and what may be called business-like, drawing, but the strongly-ruled joints across the masonry, and the thick lines generally, give a somewhat mechanical appearance to this portion of the drawings; and the throwing back of the portions on a more distant plane, as in the elevation from Dryburgh Abbey (plate 15), by vertically-ruled shading lines, is still more mechanical, and a device in architectural draughtsmanship that is, to say the least, not worth the trouble it gives; besides, it crowds up the surface of the paper and interferes with the clearness of the actual construction lines (especially curvilinear arch lines) which have to cut through all this ruling. For pencil-drawing the author's touch and style is charming. Occasionally we find a certain now fashionable trick of effect with draughtsmen carried a little too far,—that of stopping or interrupting lines and leaving the eye to carry them on in imagination. This is to a certain extent a legitimate source of effect, and it is in accordance with the actual effect of moulding lines, on old buildings especially, under varying gradations of light; but when we see the cornice of the circular tower at Falkland Palace (plate 24) completely omitted in the middle portion, as if it had dropped out (which we do not imagine is what is intended to be conveyed), one is tempted to ask whether it is not rather a too easy mode of sketching to draw only the beginning and end of a set of curves, and leave the rest to imagination. There seems also to be a disposition among the modern school of draughtsmen to be less particular about perpendicularity than formerly. In the sketch of Pends Priory Gate (plate 5) the arcade above the gateway is falling backwards; in that of Dunblane (plate 19) the clearstory windows are tumbling in. The comparison of the two leads to the conclusion that this is a licence of sketching, not a representation of fact. We used to think it was a special characteristic of ladies' architectural sketching that their buildings are not upright. Architects should be more careful.

The Suggested Board of Forestry.—The report of the Select Committee on Forestry has been issued. The Committee recommends the establishment of a Board of Forestry, presided over by a responsible Government official.

NOTES.

THE Midland Railway strike does not seem to be turning out so serious a matter for the company and for the public as it was at first feared that it would. We must confess that we regarded with considerable apprehension the statement that fresh hands were being taken on from other railways to act as drivers, seeing that to learn the signal system of a great line is no easy matter, and that it is generally understood that all drivers go through a probation of learning the road, in the capacity of stokers or otherwise, before they are allowed to drive on it; and we "attended ourselves," as the French put it, to a serious accident from some mistake of a driver unfamiliar with the road. It says much for the pains and care exercised by the officials in charge and their new helpers that nothing of the sort has occurred. With regard to the matter in dispute between the Company and the men, it appears to us that the Company are in the right. We are told by those who ought to know that the men, even under the new system proposed, would be paid better than those of any other railway in the world. The kind of complaint which the men make is represented in what was said to us by a passenger driver on the Midland (not a striker), that if he went from Liverpool to London and back with a "special" he would be so situated that he would not be able to take his turn next day, according to the rules, but must make only five days that week. This, however, is surely a matter that could be easily arranged by a scale of pay for distance run. Knowing what is the average proportion of willing workers and unwilling workers among mankind, and remembering that even engine-drivers are but human, we should expect that a system ensuring a week's pay, whether the usual amount of running was done or not, would infallibly be taken advantage of by the less worthy and diligent men whenever a chance occurred, and that to the detriment of the hard-working and willing men; and it must be remembered that the work of a great line cannot be carried on well without a strict disciplinary system, and what is now proposed by the Company is only the system in existence on most of the other great lines in England. We fear the men are in the wrong in the general demand, and there is no question that those who thought proper to pull up their trains at a given time and desert them are flagrantly to blame, and that the Company are quite right in their positive refusal to re-engage any man who had neglected his obvious duty, not only to his employers but to the public, in such a manner. It is the case of a sentinel deserting his post.

ON Monday last was issued a supplementary estimate for 363,799*l.* in connexion with the Civil Service and Revenue Department. Amongst the payments is one of 256,000*l.* to the Local Government Board for certain disturnpiked and main roads in England and Wales; and one of 8,000*l.* to Messrs. Leeming & Leeming, architects, "in full satisfaction of their claims upon her Majesty's Government in connexion with the preparation of plans for the erection of new offices for the Admiralty and War Departments." The taxpayer is hereby reminded that the scheme for fresh buildings over the Spring-gardens and Whitehall sites is for a while in abeyance. A grant in aid of 2,000*l.* to the Victoria University is also included in this estimate. There are also grants of 4,000*l.* in aid of cost of site of the new hall for Edinburgh University; and of 2,230*l.* for buildings at the Royal University, Ireland. A fair pecuniary justice seems to have been done to Messrs. Leeming & Leeming, provided they had not made working drawings for the new building; and we presume matters had not gone so far as that. Most of those who are interested in architecture will be glad to hear that their commonplace design is shelved; and it is to be hoped that public opinion may still be stirred up to protest against the miserable economy which recommends a piece of cheap patchwork for the War and Admiralty Offices, instead of a building worthy of the nation.

THE fire at Whiteley's has once more frightened people about the safety of London in the admittedly improbable event of two great fires taking place on the same night. Practically, the whole available fire engine force was concentrated on one conflagration, and though London is not now the combustible town which it was when the Great Fire occurred, there might be an unpleasantly near chance of something like a great fire establishing itself some night if two "Whiteley's" took to burning simultaneously. The question is partly one of rates, of course, and those who grumble just after a great fire because there are not enough fire-engines, would probably grumble equally at being double-rated for a fire service of double efficiency. There is, perhaps, another practical difficulty apart from this, in the fact that, however great may be the demands occasionally made on the fire-brigade, they are few and far between; and there is a not unnatural feeling as to the waste of *matériel* and *personnel* which would be incurred in keeping up a much larger force of men, engines, and horses, which would be for far the great majority of their time standing idle. If any system could be developed by which extra men could be trained and engaged, to be called out only when urgently needed, and to be at liberty to work at their own occupations in the meantime, on the understanding that they should be within a certain radius of the station, and so as to be easily summoned (which, if we mistake not, is the actual system now pursued in the lifeboat service), there would seem to be the best chance by such a system of squaring efficiency with economy, and not keeping men about as idlers: this latter necessity being in itself objectionable on other grounds than those of economy.

AS usual, a large fire brings out the stereotyped queries, "Why is not everything fireproof?" and Earl Wemyss writes to the *Times* to ask why Whiteley's and all other buildings are not built with Brannon's fireproof covering to the timbers, which by this system are encased in a fibrous, non-combustible concrete. These things are not so easy and obvious as Earl Wemyss supposes. The question of increased cost would be very considerable, which Earl Wemyss would probably recognise if he had to erect a large building at his own cost; but there is the further question, which does not occur to amateur correspondents on these matters, What is the wood doing all the while under this concrete shroud? Wood is a material the behaviour of which requires looking after, and the man who puts his faith in coating the structural timbers of a roof with concrete might be disagreeably surprised some day to find that a rotten tie-beam or strut let the roof down over his head.

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FROM a reply of Mr. Egerton's to Mr. Kimber, on Monday evening in the House, it appears that, a portion of the cornice of St. Mary-le-Strand having fallen, the church has been declared by the Board to be a "dangerous structure." This may be all very well so far, but we become somewhat alarmed when the representative of the Board goes on to say that "The Board had before them suggestions for widening the Strand at that point, either by the removal of the south side of Holywell-street or by the removal of the church, but they were not in a position to act upon either suggestion." From the tone of the Board's representative, it seems pretty evident that the Board would be perfectly ready to pull the church down if they were "in a position" to act upon the suggestion. When suggestions like this are mentioned in the House, and get into people's mouths, there are always some idiots desirous to act on them sooner or later. We published some time ago an illustration showing how the Strand could be widened by forming a roadway on either side of the two churches, in the shape of a fine design made by Mr. Brewer for a certain "Strand Improvement Association" (see *Builder* for Dec. 26, 1885). This scheme would not only not sacrifice the churches, but would realise a new and very fine effect, while giving ample roadway. But it would be easier, and cost less, to pull down a fine building, and that is the only thing that a body like the Metropolitan Board of Works thinks of.

IN June last we published the names of the authors of the fifteen selected designs for the completion for the new front of Milan Cathedral. The name "Teodoro Ciaghin," of St. Petersburg, was No. 9 in the list.. We have lately received from a correspondent the news of the sudden death of Theodore Tchagine, at the early age of twenty-seven. He was a member of the Imperial Academy of Russia, and Professor of Architecture at the University, and is said to have been a man of exceptional ability.

LONG'S Hotel, New Bond-street, is about to be demolished and rebuilt. In connexion with its earlier annals the following note by Sir Walter Scott (*vide* Moore's Life of Byron) is worthy of remembrance:—"I saw Byron for the last time in 1815. He dined or lunched with me at Long's in Bond-street. I never saw him so full of gaiety and good humour, to which the presence of Mr. Mathews, the comedian, added not a little. Poor Terry was also present." This part of Bond-street stands on what had been the grounds of Clarendon, vulgarly styled Holland, or Dunkirk, House, as bought in 1675 by Christopher Monk, second Duke of Albemarle, of the Earl of Clarendon, son to the Lord Chancellor Hyde of that title. Evelyn tells us that the price paid was 25,000*l.* Monk sold most of his purchase (*circa* 1685) to Thomas Bond, of Peckham, comptroller of Queen Henrietta Maria's household, whom Charles II. had made a baronet. Bond pulled down the house and erected Bond, Albemarle, and Stafford Streets over the property. Clarendon House stood north of Piccadilly, over against the end of St. James's-street.

WE have received from Mr. B. G. Jenkins, F.R.A.S., his London weather chart for the rest of this year, based on his paper on "Forecasting the Weather," published in the Transactions of the Royal Academy of Belgium. The first experience is hardly happy. We received the chart last Monday, and find barometer and thermometer alike marked at a low level for those two sweltering and almost tropical days, Sunday and Monday last, with the general remark:—"Barometer rather low first half of the month, bringing rain and decrease of temperature." We can only wish, at the moment we are writing, that Mr. Jenkins had been a true prophet. He adds: "Violent gale probably about the 4th (!)" However, we will keep an eye on Mr. Jenkins's prognostics for the rest of the year, and see if the results come any nearer to the predictions.

THE SALISBURY MEETING OF THE ROYAL ARCHÆOLOGICAL INSTITUTE.

THIS year's meeting of the Royal Archæological Institute was brought to a conclusion on Tuesday last, though some twenty-five members have arranged for a supplementary tour in Brittany. We this week continue our report* of the meeting, and hope to conclude it next week. The congress has been a very interesting and successful one, its success being, of course, greatly helped by the uninterruptedly fine weather which prevailed during the whole eight days of the meeting.

On the second day of the meeting, Wednesday, August 3rd, carriages conveyed a party of about a hundred members and visitors to Old Sarum, where General Pitt-Rivers took the party under his direction, and read a paper on the site of the city. From this paper we quote the following passages,—

The fact of the place having originally been a British earthwork is proved by the six Roman roads leading up to it, traces of which may still be seen, and, as the work from its shape is certainly not Roman, it must necessarily be pre-Roman and British. The three roads which led to the eastern entrance were from Winchester, Silchester, and Badbury. A fourth is believed to have run north to the Roman station of Cimetio, near Marlborough, a fifth went to Bath, and a sixth to Ilchester. It was probably originally the stronghold and place of refuge of an independent tribe of Britons, to which the inhabitants of the surrounding district retired when attacked by a neighbouring tribe. It occupies a knoll of the chalk hill, and, like most British earthworks, its outline conforms to the line of the hill. The reason it is nearly round is because the hill was round. It has two principal lines of defence,—an outer line with a deep ditch and rampart on the inside, and a smaller rampart on the outside of it, and which has two entrances, one on the east and one on the west. The inner line, consisting of a ditch with one rampart on the inside, has only one entrance on the east. It is believed that the outer line of defence only was British, and that the inner line or keep was added in the eighth or ninth century to make a fortified residence for the lord of the place. This, however, has not been proved, as it might be, by excavations in the ramparts. Besides this, there are radiating lines of entrenchment between the central keep and the outer defence made for the purpose of protecting part of the outer ward should the enemy break in through the outer line. This appears to me to be a Norman method of defence, as a similar arrangement is seen in the so-called Cæsar's camp at Folkestone, which I excavated and proved to be of Norman construction. The Normans found the mounds of earth here and built on them a line of wall on the inner rampart, the remains of which are seen at the entrance, and another on the rampart of the outer line of defence, a fragment of which, 25 ft. long, 12 ft. high, and 10 ft. thick, may be seen on the north-west side, but Mr. Roach Smith is of opinion that this fragment is Roman. The Normans also added earthen barbicans to cover the eastern and western entrances to the outer line, each having a separate ditch of its own detached from the main ditch of the place. The marks of a large well can be seen in the keep, and Leland says there are other wells, which I think would be worth finding and examining. There was a suburb outside the fortification on the south side. Few relics of any period have been found in Old Sarum, and the place has been very much neglected by archæologists. In studying ancient fortifications, it is always desirable to keep in view the distinctly different purposes which an earthen rampart served in ancient and modern times. In modern times the rampart is intended to give cover to the defender from the cannon of the enemy, and to be able to do that it must be of a certain thickness, that the shot may not pass through it, and, in consequence of this thickness of the rampart, the defenders standing behind it are unable to see down into the ditch in front of them. The line of the rampart has, therefore, to be arranged so that the ditch in front of each part may be seen into by some other part, and it is this flanking defence, as it is called, that has given rise to the different system of modern fortification. But in ancient fortifications the wall, or stockade of wood, not being required to be of very great thickness, the defenders, standing behind it and looking over it, or through loop-holes in it, were able to see down into the ditch in front of them. Flanking defence was, therefore, not necessary to the same extent: parts which, in a modern fortification, are called dead ground, or ground in which an enemy could lie concealed, would not be dead ground in an ancient fortification, and a simple straight line of ditch and rampart was all that was required. The use of an earthen rampart in ancient fortification was to give command to the defenders, to increase the force of their missiles by gravitation, and to place the stockade, or wall that was built on the top of it, beyond the reach of the enemy's battering-rams. The object of a modern rampart is to give cover, not command; the object of an ancient rampart was to give command, not cover. If this is kept constantly in view, the lines of ancient British entrenchments will be better understood. It will be found that almost invariably the height of the rampart in each part of a work was greater where the ground outside was flatter, and where command had to be obtained by artificial mounds. Where the ground sloped down from the rampart, it was not so high; and in places where the natural slope of the ground afforded sufficient command without an earthen rampart, it was dispensed with altogether, especially in the less important works. But at Old Sarum these principles of fortification, which are so usually observed in all British works, as at Whichbury, for example, on the other side of Salisbury, do not apply. Although the ground is much weaker on the east than on the west side, the ditch and rampart are of the same size all round, and this leads me to think that the fortification may have been modernised in more recent times. Alfred, in 871, ordered Leofric of Wiltonshire to make another ditch at Old Sarum, to be defended by palisades, and this alteration may have consisted in deepening the old ditch. It is even possible that the present ditch may have been altered at the time when the barbicans were added, to cover the openings, in Norman times. The father of Cnut is said to have burned the place in 1003; Cnut himself died here in 1036; the bishopric of Sarum was established here in 1075; William the Conqueror was here in 1086, and held a review of 60,000 men who swore allegiance to him. The Cathedral of Old Sarum was consecrated in 1092. William Rufus was here in 1096. There was a mint in Old Sarum, as proved by the coins struck in the place. On the coins of Ethelred II. the name of the place was written Searbe; on those of Cnut Saeber,

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* See last week's *Builder*, p. 200.

Ser, or Sere; on those of William I. and II., Sere, Seber, or Serri, which were evidently corruptions of the Saxon name Searbyrig, which latter was the Saxon version of the Roman Sorbiodunum, and this, in its turn, a corruption of the Celtic name ending in *dun* or *dunum*, "a fortified hill." On a coin of Stephen, however, it first appears in the modern form of Salis, and on the coins of Henry II. Sal or Saler. In the course of time, the soldiers and the clergy, living together in so small a place, fell out. The clergy annoyed the soldiers by constantly singing psalms, and the soldiers, no doubt, annoyed the clergy by their bad language, so that in 1256 the clergy departed, and established the new cathedral in modern Salisbury. During the long drought of 1834, the outline of the old cathedral, which had been destroyed, was discovered beneath the grass which had turned brown over the spot in the north-west quarter, and it was excavated by Mr. Hatcher and Mr. Fisher. It was found to be a plain cross, 270 ft. long by 150 ft. broad. There were double aisles to the nave, choir, and transept. The cloisters were also discovered to the north of the choir.

On leaving Old Sarum, the party proceeded to Great Durnford, where the church was visited, under the guidance of Mr. George H. Gordon, A.R.I.B.A., who read a short paper on it. Subsequently Amesbury Church, Stonehenge, and Lake House were visited. Of these we will say something in our next. In the evening the Historical Section was opened by an address by the President, the Dean of Salisbury.

A paper by Dr. Wake Smart, entitled "A Brief Account of some Celtic and Roman Antiquities within the North-eastern part of the County of Dorset, between Bockley Dyke and the River Stour from Blandford to Wimborne," was read before the Antiquarian Section. The author said that Bockley or Bockerley Dyke, the northern boundary of the area included within the scope of the paper, was also a boundary between the counties of Wilts and Dorset. It was an earthwork of high antiquity. The best general view of it was to be had from the top of Blagden Hill, over which it passed. Its whole length was from four to five miles. The western turnpike road traversed the Dyke about three-quarters of a mile from Woodyates, and at the same place the Via Iceniana, Ackling Dyke, or Roman road from Old Sarum to Dorchester, crosses it. These two roads, ancient and modern, make some confusion in their united passage through it; but the Roman road may be soon traced from its emergence into arable land, and runs nearly parallel with and near the turnpike road to Woodyates Inn, which stands on its line. As to the origin of the earthwork the author said he was utterly opposed to the Belgic theory of its construction, which he believed was generally accepted, though it was not the opinion of Mr. Warne. That theory seemed to be founded on a misconception of historical statement, for which the learned Dr. Stukeley was primarily responsible. There was no basis of proof that the Belgæ ever peopled Dorset. For the first three-quarters of a mile after it leaves Woodyates Inn the Roman road has to be taken on trust, for it is hidden from sight by the turnpike road, which has been carried along the *dorsum*; but at the eleventh milestone, where the open Down succeeds the enclosures, the Roman road parts company with its companion, and, at a sharp angle, runs in an independent direction and straight course to Badbury Rings, at the distance of about ten miles south. The widening space formed by the ancient road and the turnpike encloses a large tract of the Down, which is studded with Celtic tumuli in great variety; and overlooking all from Handley Hill is a very fine specimen of the oblong (perhaps chambered) barrow, of unknown antiquity. With the exception of this one, all the rest, which are of the Bronze Age, were opened by that indefatigable explorer, Sir R. C. Hoare, or his companion and friend, Mr. Cunnington, and most of their discoveries are now deposited in the Devizes Museum. These barrows were remarkable in producing more artistic relics, as ornaments of amber and glass, and trinkets with jet and gold, also bronze daggers, in a larger proportionate number than fall to the lot of barrow diggers in the southern parts of Dorset. In this respect these tumuli assimilate more to the Wiltshire barrows about Stonehenge. The Via Iceniana, or Ackling Dyke, in its course across the Down, presents, for the most part, a fine example of Roman road-making. It is a raised causeway, with rounded back and sloping sides, to throw off the rain and melted snow. The substratum is chalk, with a thick covering of broken flints; and in a certain section he had noticed a superficial layer of yellow gravel, such as may be dug on Pentridge Hill. The road must have been a work of much time and labour,—enforced labour, no doubt, with very little regard paid to "the groans of the Britons." It is much to be regretted that modern road-mending has done a good deal of mischief in places by pillaging the store of flints; but there are still remaining portions that have not suffered yet from the human despoiler or from the wear and tear of time. Proceeding with his paper, Dr. Wake Smart pointed out the mistakes which had been made by some previous writers as to the continuation of this road, and enumerated several Roman remains which had been found in propinquity to it or its branches.

On Thursday morning the Architectural Section was opened by an address from its President, the Rev. Precentor Venables. Of this we print the greater part on another page, under the title "Architecture and Architectural Topics in Wiltshire." Subsequently there was an inspection of some interesting old buildings in the town, including St. Thomas's Church, which was described by Mr. A. Wood, in a paper from which we extract the following passages:—

"The Church of St. Thomas is the most important of the three remaining parish churches of Salisbury. It was erected as a sort of chapel-of-ease to the cathedral by Bishop Bingham, who occupied the see of Salisbury from 1228 to 1246. Bishop Bingham is a figure of considerable importance in the history of Salisbury. Two years previous to his death, availing himself of the Royal Charter granted to Bishop Poore, he brought the Icknield-street, or "Wilt Way," to New Sarum, and built the bridge over the Avon between Harnham and the city. This proved no little injury to Wilton, and was altogether fatal to Old Sarum. Bishop Bingham built the small chapel of St. John the Baptist, now converted into a dwelling-house, upon an islet between the main stream of the Avon and an artificial channel connected with it. Here two chaplains were to say mass, and to receive the alms of passengers to defray the expenses of the bridge. We shall find that there was a chapel of St. John the Baptist in the church of St. Thomas, and it may be inferred, with some probability, that Bishop Bingham, who built the bridge-chapel of St. John on the islet was also the founder of the original chapel of St. John in the church of St. Thomas. As to this, however, there is no certainty, as the latter was the chapel of the Merchant Tailors, whose patron was St. John the Baptist. It may have been that they found an existing chapel of St. John the Baptist, and proceeded to rebuild and enlarge it. The date assigned to this church is the year 1240. No part, however, of the present structure can be assigned to the thirteenth century. It is of the same general date as the other three remaining parish churches of the city as they at present stand. It is a large and fairly handsome building of the Third Pointed style, measuring 130 ft. in interior length, and 70 ft. in width. Its component parts are a nave with two aisles, or, as the Italians, with better reason, term this arrangement, three naves (*tre navate*), a chancel with aisles or subsidiary chapels, and a double vestry or sacristy. To the south, flanking the third bay of the aisle, is a square tower of moderate elevation, not with the pyramidal capping which I am wont to hear termed a Sussex head, but an octagon in plan, although of no higher elevation than one is accustomed to see in Sussex. The detached position of this tower, and the fact that the buttresses die into it below the belfry stage, give it more of the character of a campanile than is common in England. But the practical genius of our countrymen is shown by the employment of the lowest of the four stages as the south porch of the church. Its worst feature is the awkward compromise between a staircase turret and a buttress at the north-east angle. The best is the panelled parapet that surmounts it, and next to that the elegant belfry windows, divided into two lights each, filled with the quatrefoiled tracery so common in Somersetshire. This tower contains a peal of eight bells, brought hither from the detached belfry of the cathedral at its demolition by Wyatt, the iconoclast. On the east side of the tower are two figures to strike the bells of the clock. In the second stage, on the south side of the tower, are two large niches with figures, now very much mutilated, one representing St. Thomas à Becket, the patron of the church, and the other the Virgin and Child, the arms of the see of Salisbury. It may be observed that the three parish churches of Salisbury exhibit great variety of treatment in the position of their towers. The tower of St. Thomas is attached to the third bay of the south aisle; that of St. Edmund's is what is termed disengaged at the western end of the nave; that of St. Martin's projects from the south aisle, and is flanked by a porch and chapel, now used as a vestry-room, extending across the nave and north aisle. The only other projection, with the exception of the unusually large vestry, from the general plan of the church of St. Thomas, is that of a turret staircase on the north side which formerly conducted to a room above the north porch, which, with the porch itself, has been removed. The third window from the west occupies the site of this porch. The upper part of the turret is partly supported by a corbel carved with the head of St. Thomas à Becket. The date assigned to the nave and its aisles is 1404. The chancel is some forty years later. The history is evidently this, that when the nave was built, Bishop Bingham's old chancel was left standing, but this arrangement proving unsatisfactory to the munificent church-builders of those days, the rebuilding of the chancel was shortly afterwards undertaken, and the whole church brought to its present uniform appearance. The site was not made a mere *tabula rasa*, and then built upon with the temerity of our modern builders; the rebuilding was a thing of time and circumstance, and travelled from west eastwards, instead of from east westwards, as would have been the case with a wholly new fabric. The great west window occupies nearly the whole of the upper portion of the west front. It is of seven lights. It is subarcuated by an elliptical arch running through all the compartments. It is also transomed. The spandrils are hollowed out, but not pierced. To the south of the west door was formerly the monument, carved in oak, of Humphrey Beckham, now removed for protection to the porch beneath the tower. Humphrey Beckham, other specimens of whose carving are still extant in Salisbury, died in 1671, at the age of eighty-eight. He informs us upon his monument that it was his own work. His claim to these rudely-fashioned *alto-relievi* would hardly be contested by any considerable artist. The subjects are the Sacrifice of Isaac by Abraham, the Dream of Jacob, the bargain of that Patriarch concerning the striped and ringed cattle. Such subjects,—treated on about the same artistic level,—are common on the old iron fire-backs in Sussex farm-houses. The lower windows of the nave of the church are large, divided into four lights each by mullions, with abatement lights in the heads, save in the outer compartments, where a *vesica piscis*, placed obliquely, gives something of a Flamboyant character, and relieves so far the ribbed rectilineal regularity of the Third Pointed style. The clearstory windows have elliptical arches, a form not very frequently met with, but here evidently a favourite with the architect, as he has introduced it, as we have seen, into the west window. There is a good example in Middle Pointed at Over, in Cambridgeshire; there are examples in the Church Transitional to Third Pointed at Etchingham, in Sussex; and there are examples also at St. Andrew's, Halstead, Essex, which, like St. Thomas's, Salisbury, is well within the Third Pointed period. The clearstory is surmounted by a battlement without pinnacles. The interior of the Church of St. Thomas is large and dignified. The arches of the nave are each 16 ft. in width. These arches rest on square piers fluted at the angles, set with four shafts on the cardinal faces, surmounted by octagonal capitals. These are enriched with vine leaves, and in some with clusters of grapes. The mullions of the clearstory windows are carried down below the sills so as to form blank panelling, and rest upon the outer surface of the arches. The "Doom" over the chancel arch is worthy of particular observation. It was first discovered in 1819. It is supposed to have been concealed during two centuries. It was re-touched, or, as would appear, really re-painted; then again covered over, and only fully shown of late years. The Heavenly Jerusalem, at the top of the picture, appears above or is partially concealed by the figures. Above it, on the left, is seen the sun in its splendour, and on the right the star in the East. In the centre is Our Lord seated on a rainbow, with His feet resting on another of less size. At His feet are the Twelve Apostles seated in judgment. Our Lord shows the five sacred wounds. To His right is an Angel bearing the cross, which is of the tau-shaped form, whilst on his left is another angel holding in one hand the spear and sponge, and in the other the column of the flagellation. From the cross hangs the Crown of Thorns. At the right extremity of the rainbow upon which our Lord is seated appears the Blessed Virgin in a kneeling posture. At the left extremity of the rainbow is a male figure, also kneeling, with a nimbus round his head and having a long mantle. It seems not unlikely that he is one of the patriarchs of the Old Covenant, or St. John the Baptist, the last and greatest prophet of that dispensation come to judge to condemnation the unbelieving and undeserving of the new dispensation. On either side angels summon with trumpets the dead to judgment. The female figures are represented as rising in shrouds from their graves, whilst on the right angels are receiving the Blessed into the Heavenly City. An angel on the left is turning from the reprobate, and apparently casting a glance of pity behind. On the left is a representation of Hell, beneath which is the inscription: "Nulla est redemptio." Here are depicted several demons and a group of figures chained together and being drawn towards Hell's mouth, represented by a dragon. With the freedom of that age, — of which there are many other examples,—one of this group is distinguished by a mitre. There is also a representation of a bishop among the Blessed. The bishop on the left hand is accompanied by two kings. This painting is apparently of the close of the fifteenth century. The figures below are described as King Henry II. with cockle-shell and pilgrim's staff and St. Thomas of Canterbury. As Henry II. made his pilgrimage, not to Compostella but to Canterbury, I fail to discover the appropriateness of the cockleshell. The chancel of St. Thomas was restored by Mr. G. E. Street. There are three frescoes on the wall of the south chancel aisle: they represent the Annunciation, the Visitation, and the offering of the Magi: the last is much mutilated. On the beams of the roof are these inscriptions alternately, — 'Orate pro animâ Wilhelmi Swayne, et Christinæ Uxor[is]ejus,' and 'Orate pro animâ Jacobi, patris Wilhelmi Swayne.' On the shields in the ceiling are first, the Swayne arms: azure, a chevron between three fleams; (2) the well-known emblem of the Holy Trinity; (3) a representation of the five sacred wounds; (4) a merchant's mark of the type which is supposed to represent the flag which accompanies the lamb of St. John the Baptist. This chapel was the chantry of William Swayne. There is a crucifix in stone on the fifth buttress from the east of the south chancel aisle. The altar tomb of William Ludlow, of Hill Deverel, who seated and painted the north aisle, butler to Henry IV., Henry V., and Henry VI., was formerly on the north side of the chancel; but it was taken down and broken to pieces at the same time that the rood-screen was destroyed. In the north chancel aisle are to be seen the remains of the staircase to the rood-loft. In the windows of this aisle are fragments of glass, one of which is called the Head of Moses. The large organ in this aisle is that which was given by George III. to the cathedral, in the character of a 'Berkshire gentleman,' Windsor being situated in that county. It is that which must have been in the mind of the novelist as being played upon by Tom Pinch on his visit to Salisbury. It was built by Green, of Isleworth. On the ancient monument, inscribed in the last century with the name of Chattyn Markes, &c., merchant marks may again be seen. In the same aisle is the parish chest bound with iron bands. There is a similar one in Bridport Church near the city. In the vestry is a Mediæval frontal, or it may be the upper part of a cope, in a frame. The subject inwoven is the Salutation, with numerous spread eagles, or two-headed eagles displayed, and fleur-de-lis. There is also a portion of a vestment in a frame. There is also a small modern figure of St. Thomas à Becket. In the inner vestry there are stained-glass representations of St. Thomas à Becket, St. Christopher, and a third figure, greatly obliterated, but which is described as our Lord in the act of benediction. In conclusion, I may remark that, now that St. Nicholas' Church exists as a mere fragment, the cathedral of Salisbury and the parish churches stand not in a competition that would be fruitlessly maintained on the part of the latter, but in sharp contrast. The destructive hand of Wyatt has contributed to this result by sweeping away some minor portions of the cathedral. We have now the Early Pointed in its perfection, and the Late Pointed in sufficiently adequate representation side by side in the cathedral and parish churches of this interesting city, and the eye is educated by the contrast between them, and if it learns to prize yet more highly the beauty of the former, yet neither does it despise these later sacred houses, of which St. Thomas's is the chief."

In the afternoon there was a carriage excursion to Britford and Downton, taking Longford Castle *en route*, and returning *vià* Trafalgar. At Britford and Downton the churches were visited, and at Downton the "Moot" was inspected, under the guidance of Mr. E. P. Squarey. We will say more of this and of the subsequent days' proceedings in our next.

On Friday there was an excursion to Bradford-on-Avon, where the Tithe Barn and the Old Bridge were visited, the party afterwards proceeding to Kingston House and the Saxon Church. In the afternoon South Wraxall Manor House, and the Manor House and Church of Great Chalfield were visited. In the evening there were Sectional meetings. In the Architectural Section, papers were read by Mr. C. E. Ponting on Edington Church, and by Mr. E. Green (on behalf of its author, Mr. J. A. Gotch) on "Longford Castle and Longleat." This paper we are enabled to print on another page.

Saturday was devoted to a visit to Wardour Castle, Tisbury Church, Wilton Church, and Wilton House.

In the evening, before the Historical Section, Mr. J. S. Udal read an interesting paper "On Dorset Seventeenth Century Tokens." Incidentally referring to the national collection of coins and tokens at the British Museum, he said, — While I am upon the subject of our national collection of tokens, I hope I may be pardoned when I say that I think it is a great pity that wider powers should not be given to those having the care and superintendence of our coin departments in dealing with private collectors and others wishing to exchange or purchase duplicates from them. I understand that it is the practice for them to be allowed to accumulate, and then to be sold wholesale to the dealers. The authorities are not allowed to exchange or sell privately as occasion offers. I could more than once have offered a very liberal exchange of duplicates to the public authorities, but have been met by the above-named rule. It needs very little discrimination to infer that considerable advantage would result to our public collections were this rule a little relaxed and a little more latitude in this respect allowed to the heads of those departments. I understand that as far as the Bodleian collection is concerned, an attempt has been recently made to pass a new statute to that effect, though as yet without success. It is to be hoped that those having authority over the disposition of our public collections will be led to deal more liberally with the coin-collecting section of the public; it will assuredly be as much to the ultimate advantage of the national depositaries themselves as it will be a decided boon to private collectors.

On Monday, Boyton Church and Manor House, Scratchbury Camp, Heytesbury Church, Knook Church, and Heytesbury House were visited; and on Tuesday carriages left with a party of about sixty for a long ride across the Wiltshire Downs to Farnham Museum, passing *en route* Bockley Dyke and Ackling Ditch. They then proceeded to Rushmore, where they were entertained by the President of the meeting, General Pitt-Rivers. After inspecting some recent excavations, near Rotherley Wood, of a Romano-British village, they visited Ferne, and subsequently returned to Salisbury from Tisbury Station.

We will next week conclude our report by giving amplified notes on some of the buildings and antiquities which we have only had space to name in the foregoing lines.

ARCHITECTURE AND ARCHITECTURAL TOPICS IN WILTSHIRE.*

Prehistoric architecture, illustrated so magnificently in the county of Wilts in the mysterious circles of Avebury and Stonehenge, and the standing stones, cromlechs, and cistvaens which stud its downs, as well as in the British camps and villages which so abundantly crown the hill crests, belongs to the section of Antiquities, and does not enter into our present purpose. Architecture, properly so-called, begins for us with the so-called Anglo-Saxon era,—a convenient and intelligible if not strictly correct term. Of this era in ecclesiastical architecture, the county of Wilts has several examples to show, one of which is certainly unsurpassed in value by any building of its age in England. I mean, of course, the old church at Bradford-on-Avon, rescued from desecration and restored to its sacred purpose by one whose premature death has inflicted an irreparable loss upon the archæology of Wiltshire generally, and of Salisbury in particular, never more acutely felt than at our present gathering, the late Canon Rich-Jones. In this little building,—which, in the words of one who, though happily he is still alive and likely to live for many years, and is not so very far from us, is, unfortunately, not with us, Professor Freeman, is "probably the most ancient unaltered church in England,"—we may safely recognise the church erected by St. Aldhelm at the beginning of the eighth century, and mentioned by William of Malmesbury as standing in his day, as it still stands in our day, at the Broad Ford over the Avon,—"est ad hunc diem in eo loco ecclesiola quam ad nomen beatissimi Laurentii (Aldhelmus) fecisse predicatur." All qualified judges who see it will agree that there is only one period at which a building so remarkable both in its outline and in its detail could have been erected in England, and that the period named by Malmesbury. There are other examples of the same rude pre-Norman style in the remarkable Church of Britford and at North Burcombe, and though less certainly at Manningford Braose, where the east end is semicircular instead of square, as is usual in English churches anterior to the Norman Conquest, and at Avebury, where Mr. Ponting has discovered and replaced a remarkable series of small circular clearstory windows, unique in character. As far as I know, no instance of the characteristic Anglo-Saxon tower, such as those at Earls Barton, Barton-on-Humber, Barnack, and in the city of Lincoln, occurs in Wiltshire.

We hardly need to be reminded how intimate is the connexion between the character of our Mediæval churches and the geological formation of the district to which they belong. The nature of the local building-material rules the architecture. There is an exception to the law where, as in parts of Lincolnshire and the adjacent low-lying district, water carriage was easy and inexpensive. Here we find an abundance of noble churches, excellent in their stonework and unstinting in the richness of their design, in a country which does not produce building stone of any description, the whole being brought on rafts or in barges from the quarries of Barnack and Ketton. But where there was no such facility of transport the builders were entirely dependent on local material, and the character of the churches, both in form and detail, varies accordingly. The reason why we find round towers so common in Suffolk and parts of Norfolk is that they could be constructed of flint alone, which was abundant, and had no angles to be strengthened with quoins of stone, which was rare. The same causes led to the invention of the elaborate patterns of black flint set in tracery of white stone, which are so beautiful a feature in the East Anglian churches. The variety of light and shade produced elsewhere by deeply-cut mouldings and recessed panels, here, where stone was scarce and thin and had to be used economically, was ingeniously given by the contrast of colour on the same plane. The thatched roofs speak of a swampy district, where slates were not and tiles were dear, while sedge and reeds might be had for the cutting. Want of stone and abundance of pebbles has also given us the boulder-built churches of the Sussex seaboard, while the wooden bell-turrets and shingled spires of the same county may be traced to the wide-spreading forests which, until the iron works which once had their seat there had consumed them all, and thus, fuel ceasing, put themselves out, covered its surface. The unmanageable texture of the Cornish granite is answerable for the coarseness of the ecclesiastical architecture of that county, while the fatal softness of the red sandstone of Cheshire and Staffordshire has led to an indulgence in an excess of ornamentation which has proved only too transient.

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* From the Address given by the Rev. Precentor Venables, F.S.A., as President of the Architectural Section of the Salisbury meeting of the Royal Archæological Institute, elsewhere referred to.

If now we turn to Wiltshire, we find the same law dictating the character of the churches. Wherever good stone is abundant, and as the masonry of Salisbury Cathedral testifies, no county in England supplies better, as in the northern part and in some districts of the south west, the churches are usually large, lofty, and carefully designed, much pains being taken,—as is noticeable in the noble chancel of Amesbury,—in the ashlar of the walls, and in the exterior generally, on which a good deal of ornament is often bestowed. Where, on the contrary, as in the southern and eastern districts, the only building material is chalk, clunch, and flints, with a small amount of green sandstone that will serve for windows and doors and dressings, the churches are diminutive and homely, with wooden belfries or low square steeples. These materials are often arranged in chequers of stone and flint, producing a very pleasing effect. This mode of walling is very common in Wiltshire. Many of these smaller churches possess features of considerable interest, more especially those which have escaped the hand of the restorer,—which has, alas! been very busy in Wiltshire,—or those on which that hand has been laid lightly, and has been guided by the first principle of all restorations, to preserve and maintain and never to destroy. Norman doorways and chancel arches are by no means infrequent, and are sometimes richly ornamented, while a considerable amount of good Early English work is to be found, often plain and simple, but always pleasing. These smaller and humbler churches often get passed over by the tourist, but they will almost always reward a visit. Even when their architectural features are of the plainest, there is an undefinable something in their shape, and colouring, and position, and the way in which they group with the cottages which are scattered about them, and the trees out of which their little belfries peer, on which the memory dwells with more satisfaction than on many a more stately edifice.

It is observable that, while in some large parts of England the cruciform plan is hardly found at all, churches of this form are of somewhat frequent occurrence in Wiltshire. Some of these are on rather a large scale and of considerable dignity, such as Edington, Westbury, Amesbury, Tisbury, Heytesbury, Downton, Bishopston, All Cannings, Bishop's Canning, Great Bedwyn, and several more, while others are small and unpretending. The nave at least is commonly provided with aisles, but the noble Early English church of Potterne, one of the finest in the county, has none, and the churches of Winterbourne-Stoke, and the early church of Britford, are also aisleless. A singular line of cruciform churches is found in the Vale of Chalk, where Bishopston, Broad Chalk, Bower Chalk, Alvediston, and Berwick St. John in succession exhibit the same plan. A central tower is essential to the completeness of the outline of a cruciform church. This is seldom wanting in the Wilts cross churches; and in some, as at Chilmark and Bishop's Cannings, where it is crowned with a stone spire, at Potterne, Westbury, St. Sampson's Cricklade, and others, it is of considerable dignity. Corsham Church had till recently a central tower, but when it was restored by the late Mr. Street he pulled it down and built a new tower and spire in a different position. No doubt he felt that there were good reasons for his action, though we cannot but regret it. While speaking of towers it should be mentioned that two churches near the N.E. border, Purton and Wanborough, present the unusual feature of two steeples, one at the west end of the nave and the other in the centre. This arrangement, it will be remembered, is also found at Wimborne Minster. There is a reason for this arrangement there, the western tower being the belfry of the parochial nave, that at the intersection belonging to the Collegiate Church. I am not aware that any satisfactory explanation can be given of its occurrence at Purton and Wanborough.

Stone spires, though not numerous, are not very uncommon. Passing over that of Salisbury Cathedral, confessedly without a rival in England, and for the union of simple majesty and exquisite grace almost without a rival in the world, these spires do not, generally, take the first rank for height or beauty. There are, however, good examples at Chilmark, Bishop's Cannings, Trowbridge, and Lacock. Pack-saddle roofs—an unusual form in England—are found at North and South Wraxall and at Winsley. A bell-turret, crowned with a spirelet of much elegance, is rather frequent in the north-west corner of the county, as at Acton Turvill, Sutton Benger, Corsley, Corston, Biddeford, and Great Chalfield. The small wooden bell-turrets of the south-east have been already referred to. They are often very picturesque.

Stone groined roofs, though far from being common, are less uncommon in Wiltshire than in some other parts of England. The Norman chancels of St. John's and St. Mary's, at the Devizes, have good vaults of that date. Early English and Decorated vaulting is found at the beautiful churches of Bishop's Cannings, Urchfont, Steeple Ashton, Bishopston, and Marlborough, St. Peter's. The nave of Steeple Ashton is groined in wood, the ribs springing from stone shafts. At Edington there are curious plaster ceilings, of late date, which deserve notice.

Taking a general survey of the county, we find Norman work very abundant, though not usually of a very high order. The humble village churches frequently contain a door or a window, or a chancel arch of that period. Great Durnford is a typical example, and the fabrics of a large number, though with but slight architectural traces of their date, evidently belong to this epoch. We have examples within a short distance of Salisbury. Berwick St. James preserves its Norman doorway, while we have doorways and other remains of Norman work in the churches of Winterbourne Stoke, Stapleford, South Newton, and Little Langford, all very near together.

The most conspicuous Norman building in Wiltshire is the fragment of the Abbey Church of Malmesbury. Much of it, however, is late in the style, and belongs rather to the Transition period. The doorways are well known. The outer south door, with its interlaced bands and series of Scriptural medallions, is unsurpassed for richness of decoration by any door in England. We have fine examples of Late Norman in the groined chancels of the two churches at Devizes, the work of the warlike Bishop Roger, the greatest builder of his day. The churches at Corsham, Preshute, and several others, preserve their Norman arcades; and at Melksham, amid many undesirable alterations, we have enough left to make out the original cruciform Norman church.

Passing to Early English, in the unrivalled cathedral under the shadow of which we are meeting we have the most perfect example of the style on its grandest scale to be found in England. As is natural, its influence spread, and we find village churches displaying the same purity of design, harmony of proportions, and dignified simplicity of outline, of which the mother church set the example. Potterne, which may very probably be ascribed to Bishop Poore, the founder of the Cathedral, may not improperly be called Salisbury Cathedral in miniature. Bishop's Cannings, though with later alterations which mar its unity, is also a beautiful example of the style, which we find also in great excellence in the chancel of Great Bedwin, at Collingbourne, Kingston, Boyton, Purton, Downton, Amesbury, and many other places.

The fourteenth century seems to have been less prolific in church building in Wiltshire than elsewhere. There is, it is true, no want of Decorated architecture in windows, doors, and in portions of churches, but there are fewer entire churches in this style than in the midland counties. The chancel of Downton is a good example of Early Decorated. We have rich Flamboyant work in the transepts of Great Bedwyn, and in those of Lacock; we must mention also the chancel and transepts of the very interesting church of Bishopston, especially the south transept, with its curious external cloister. At Boyton the Decorated work is earlier in date, and very good.

The transition from Decorated to Perpendicular is exemplified in the very remarkable church of Edington, now under careful restoration by Mr. Ponting, one of the most important buildings we possess for the history of English architecture, in which we trace the beginnings of the new style, — the special growth of English soil,—and watch the flowing curves of the tracery stiffening into rectilinear uniformity. Perpendicular not improbably had its rise in the Abbey of Gloucester. We find the earliest-dated instance of its employment in the south transept of the cathedral, soon after which it appears in the remodelling of Winchester Cathedral, commenced by Bishop Edington, 1345–1366, by whom it was adopted in the noble collegiate church founded by him in his native village as a thank-offering, which is deservedly one of the chief glories of Wiltshire. The first stone of this church was laid in 1352, and it was dedicated in 1361,—dates of some importance in the origin of the Perpendicular style.

It would occupy too much of your time to dwell on the Perpendicular work in this county, as everywhere there is hardly a church which does not exhibit some trace of the great wave of rebuilding and alteration which passed over the country as the Gothic style was losing its life and freedom and gradually giving way to the newly-introduced Classical revival. The stately church of Mere, with its noble west tower, may be mentioned as one of the best in South Wilts. Westbury deserves notice as an example of a church originally Norman recast in Perpendicular, much in the way Wykeham treated Winchester Cathedral. The nave is very stately, and the aisles show a not very usual feature in the transverse stone arches, with interpenetrating mouldings, which cross them from north to south. The masonry throughout is of great excellence. While at Westbury we have an adapted building, and at Mere a mixed building, at Trowbridge we have an example of a Perpendicular church raised from the ground as one design without any admixture of earlier styles, by the munificence of the inhabitants, in 1475. It is a typical church of its date, with a western tower groined within and lofty stone spire and north and south porches, and a very beautiful open-timber roof, the whole deserving Leland's description as "lightsome and fair." The font is lofty, carved with the emblems of the Crucifixion. Steeple Ashton, built between 1480 and 1500 by the clothiers, is also a very noble Perpendicular church, exhibiting well-finished masonry of the highest order of excellence. The clearstory is lofty, the arcades lofty and imposing, the windows large and good. Both the chancel and the nave are groined, the former in stone, the latter in wood. St. Thomas's, Salisbury, though late and rather coarse, is a very good example of a rich Perpendicular town church. With its light arcades, very wide aisles, and low timber ceilings, it supplies a model the designers of our town churches might do well to follow. I would except the clearstoried chancel, which is of somewhat excessive length for modern requirements. Perpendicular work of peculiar richness is to be found in the north-east angle of the county, sometimes in the fabrics of the churches, sometimes in appended chapels and chantries. The nave of Lacock is a sumptuous building, and the Lady-chapel deserves notice for its fan-traceried roof and general richness of character. The Baynton Chapel, at Bromham, is also a very gorgeous example of Late Gothic with a richly-panelled ceiling. In the same district a rich canopied niche crowning the apex of a gable is by no means infrequent; we have good examples at Lacock and St. John's, Devizes. The chancel and tower of Calne, rebuilt after the fall of the older tower in 1645, is a very interesting specimen of the survival of the Gothic style, of which we have such interesting examples at Oxford and Cambridge.

The monastic remains of Wiltshire are scanty. The great religious foundations of Wilton, Amesbury, and others have entirely passed away, leaving but small fragments of their once extensive buildings. At Malmesbury, a large portion of the nave is still standing, and a vaulted crypt, under what may have been the abbot's house, and some other relics, are built up in an Elizabethan house. At Bradenstoke, the refectory, a beautiful example of Early Decorated work, is preserved, with its vaulted undercroft, prior's house, and domestic offices. The remains of Monkton Farleigh are of Early English date, but are very insignificant. The most important and best preserved monastic building in the county is the nunnery at Lacock, founded by Ela of Salisbury, in memory of her husband William Longsword. It is too little known, for it exhibits one of the best existing examples of conventual arrangement, substantially unchanged. The cloister, with its three beautifully-vaulted alleys of good Perpendicular design, is surrounded with the usual monastic buildings, on a small scale but of excellent character. The church on the south side has entirely passed away. Opening out of the east walk we have in succession the sacristy, the chapter-house, the slype, and the calefactory or day-room, all of Early English work, with the Perpendicular dormitory above. The refectory occupies the north side, standing on a vaulted undercroft, with the kitchen at the west end. The whole building is of the greatest interest, and it is to be regretted that it lies too far away for us to visit it on this occasion.

If the remains of monastic architecture in Wilts are but scanty, the remains of military architecture are scantier still. The great castles of the county which played so important a part in English history, have completely vanished, leaving only their huge mounds and earthworks, with some fragments of walls and vaults to testify to their former existence. I may mention Old Sarum, Devizes, Marlborough, Castle Combe, and Ludgershall. The only castle of which the walls still stand is Wardour, hexagonal in plan, a good example of Early Perpendicular, when the military castle was passing into the nobleman's residence.

In domestic architecture few counties are so rich as Wiltshire. In the northern part of the county nearly every parish can show specimens of the smaller manor-house of the fifteenth and sixteenth century, with long gabled front, two-storied porch, hall and solar, lighted by stone mullioned windows. There are also several examples of the larger and more stately mansions, especially those of South Wraxall, with some later adaptation; Great Chalfield, and the Duke's House at Bradford,—all of which we are to inspect,—Norrington, Charlton, Corsham, Littlecot, and many more. The still larger and more magnificent houses of Wilton, Longleat, Longford, and others, have few rivals in any part of England. The town houses of Salisbury, the Audley Mansion, and the Church House, the Hall of John Halle, and others more or less mutilated, afford an excellent illustration of the domestic life of our civic forefathers.

Naturally the examples of later architecture are more abundant, but earlier examples are not wanting. The fourteenth-century houses at Stanton, St. Quentin; Place House, Tisbury; Woodlands, Mere; and the Barton Farm, at Bradford, with its noble fourteenth-century barn, deserve the most careful examination.

I pass now to notice the chief architectural events connected with archæology during the past year. These have been comparatively few. Commercial and agricultural depression, by drying up the springs, have retarded the work of restoration, and there are few extensive works of that nature to record. The most important work is that still in progress, and likely to be in progress for many years to come, at the Abbey,—now the Cathedral Church,—of St. Albans. While desiring to do the fullest justice to the constructional skill, wide knowledge, and, above all, to the munificent liberality of Lord Grimthorpe, it is necessary in the cause of true archæology and of architectural history to record a firm protest against the mode in which his lordship is dealing with that venerable fabric (applause). It is true that he has, at great cost, ungrudgingly rendered, secured the stability of a decayed and tottering fabric, and that by his generosity one of our grandest architectural monuments will be preserved from ruin and a cathedral given to the new diocese equal in structural excellence to that of any other diocese in England. For this Lord Grimthorpe cannot be too highly commended. But every one to whom the historical character and structural continuity of our churches are dear must deplore the rashness with which his lordship is wiping out the original features of the edifice and replacing them with architecture of his own design, which, whatever its merits,—a topic on which I do not wish now to enter,—has no real affinity with the fabric, it being entirely unlike anything which ever did or ever could have stood there. The west front has been finished for a year or two, and does not come within our limits, but during the past year the south transept gable has been entirely demolished and a new one erected. The old gable end,—a portion of the veritable old St. Alban's,—was Norman, with a round turret of interesting character at the west corner, and a large Perpendicular window, inserted by Abbot Whethampstead. At the base were the very curious, elaborately-ornamented arches of the Norman style. All these are now of the past. What the English eye has been familiar with for centuries is gone, and we have in its place an entirely modern building, designed, it is true, after the best models of ancient art, but falsifying the history of the building. The gable now presents a series of five gigantic lancets, as big or bigger than the celebrated "Five Sisters of York," flanked by turrets, square instead of round, finished with conical caps, the arches of the slype being nailed up as it were, like hawks or weasels on a barn door, on the wall below, appendages to not integral parts of it. A correspondent writes:—"The whole south front of this transept will probably be new, the effect good, the introduction of the slype arches clever, the effect of the high roof satisfactory, but . . . I fear the north transept will soon be similarly transmogrified." Once again, in the name of the Institute, I may be permitted to raise a serious protest against such a treatment of an ancient building (applause). It is endeavoured to be justified by reference to the similar mode in which the earlier builders treated the work of their predecessors, which they pulled down and altered unscrupulously to replace it by work of the reigning fashion. But at that time architecture was a living, growing art. The new work belonged to its own age and was its natural growth, now all we can do is to copy and adapt; with what success I leave it to those who visit St. Albans to say.* We have a new, well-built, carefully-designed, and attractive design,—a new lamp, bright and burnished, in place of an old lamp, battered, broken, and dingy. Some may prefer the new lamp; I prefer the old one.

Another work is proceeding in the same Cathedral in a far different and more reverential spirit,—the restoration of the statuary of the long-impoverished reredos, by the munificence of Mr. Henry Hucks Gibbs. Everything has been done here, with due respect to ancient lines and historical precedent by a true architect, Mr. Arthur Blomfield.

There is not much other cathedral work to record. At Peterborough the central tower has been carefully rebuilt in its old form, by Mr. Pearson,—happily preserving the east and west pointed lantern arches. The want at present of corner turrets,—those taken down, it will be remembered, were late additions by Dean Kipling,—gives the tower a bald, stunted look. We wait with anxiety to see how it will be completed. It is well known that Mr. Pearson desires to add another story to the very low tower. Until the point is finally decided, the turrets are necessarily suspended. No steps have yet been taken for the restoration of the choir.

At Winchester, the investigations of the energetic Dean have been rewarded by the discovery of the foundations of what is probably the earlier church, beyond the present north walls. The Norman crypt has also been opened out, and several ancient interments brought to light. The statues are being replaced in the reredos. We are beginning to perceive that tenantless niches are as unmeaning a decoration as vacant picture-frames.

At Lincoln, excavations in the retro-choir have revealed the foundations of the semi-hexagonal apse, with radiating chapels, which was the original termination of St. Hugh's Minster, removed for the erection of the Angel Choir,—the saints' building being destroyed to recover the saint's shrine. The external effect of this east end, though rather crowded, must have been of great singularity and beauty.†

The cathedral of Manchester,—a mere stately parish church of the latest style of architecture, without any pretensions to the minster type,—has undergone much rebuilding of its walls, which were considerably decayed, and other much-needed improvements. But a real cathedral at Manchester is still wanted. Decided steps have been taken to supply this want at the sister city of Liverpool during the past year by the cathedral competition. Out of the large number of designs submitted, three were selected by the committee, those of Mr. Brooks, Messrs. Bodley & Garner, and Mr. Emerson, and submitted to Mr. Christian for adjudication. Of these, Mr. Christian, while highly commending the other two, selected that of Mr. Emerson as better fitted, in its plan and arrangements, for the requirements of a modern cathedral than the others, in which the old cathedral idea was more strictly followed. I do not think that Mr. Christian's verdict has met with general acceptance (hear, hear). Mr. Emerson's plan is certainly one of great merit. The value of a spacious domical area for the reception of large congregations is proved by the cathedral of St. Paul, nor can any one question the beauty of a cupola, uniting dignity and grace, as the central figure of a great church. But the idea is far superior to its carrying out. The style chosen,—I may rather say invented,—by Mr. Emerson is far from attractive, and the ornamentation is in some cases almost grotesque. I could only consider it a national misfortune if the design were carried out in its present form (hear, hear.) To render it at all worthy as a monument of the nineteenth century the whole must be redesigned; the skeleton reclothed in more comely attire. As architectural studies, the severe Early English of Mr. Brooks, and the rich, luxuriant Decorated of Messrs. Bodley & Garner, produce far more satisfactory results. Mr. Brooks's design is specially admirable (hear, hear.)

While Liverpool Cathedral still remains, as one may say, in the clouds, that of Truro, due to the exquisite genius of Mr. Pearson, is all but completed,—at least the eastern half of it,—and will be consecrated before the close of the year. Our generation may be congratulated on possessing an architect capable of producing so beautiful a work, instinct in every part with artistic life, not unworthy to take rank,—especially when completed,—with the best of the smaller cathedrals of our country. *O si sic omnes!*

The same great architect has been intrusted with the re-erection of the destroyed cloister at Exeter, with a library over the southern wall. Sufficient indications of the original work remain to guide Mr. Pearson in his design.

Mr. Pearson has also restored the Abbey gateway at Bristol Cathedral. He has created a very beautiful structure, and we cannot doubt that so conscientious an architect has found satisfactory evidence for all that he has done. But the result has been that the old building has put on a new face, which looks strange to those who knew it in former years. It is earnestly to be hoped that Mr. Pearson will absolutely forbid the rechiselling of the elaborate Norman mouldings of the well-known archways, which those who have the conduct of the work are contemplating. Such an operation would entirely destroy the historic value of these very remarkable archways, and transform them, for all practical purposes, into nineteenth-century work.

One of the most important works of restoration carried out during the past year has been that in the Priory Church of St. Bartholomew's, Smithfield, under the able and conservative hands of Mr. Aston Webb. Through the energy of the late (alas! that I should have to say the late!) incumbent, the Rev. W. Panckridge, who scarcely lived to see the completion of the great work on which he expended his vital strength, and the munificence of the patron and others, the Lady Chapel has been purchased and rescued from desecration, the Norman apse restored, and the whole church re-roofed and refitted. Happily, the interior walls of the church have not been touched, save with a broom, and still retain the rich colouring which time has imparted to them. The church still looks old; a sadly rare case in a restored church. This is, however, only the commencement of a work of restoration the successive steps of which we shall hope to be able to record in future years.

Time forbids me to speak of other minor works. I can barely refer to the new buildings rising on the west side of Westminster Hall. One must not call them "restorations," as there was nothing to indicate more than the general plan and arrangement of what preceded them. On these much difference of opinion has been expressed. Let us hope the result will justify the soundness of Mr. Pearson's judgment. Waltham Cross is, for the second time in my own memory, under the restorer's hand. We cannot hope that, after such repeated demolitions and re-constructions, much more of the old structure will be left than was left of the traditional Irishman's knife.

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* We must entirely differ from the line taken by Precentor Venables here, and regret that he should have taken up a position so open to attack. The real objection to what is being done by Lord Grimthorpe at St. Alban's, as we have said over and over again, is not that it is new design, but that it is bad and clumsy design, carried out by incompetent hands.—Ed.

† For an article, with plans, fully describing these discoveries, see the *Builder* for May 21 last, pp. 755-58.

I may conclude with an expression of thankfulness that after a somewhat hard fight the Stone Bow at Lincoln, crossing the High-street much as Temple Bar used to cross Fleet-street, with the Guildhall over it, has been rescued from impending destruction, and has been admirably restored by Mr. Pearson. The changed policy of the municipality and citizens of Lincoln with regard to the architectural remains of their town, which we rejoice to trace also in every part of England, is one among many satisfactory evidences of the excellent work done by the Institute, and other kindred societies, in spreading archæological knowledge, and awakening a feeling of reverence for and interest in the monuments of the past, which in our own memories was so lamentably deficient. We may congratulate ourselves that we have not lived in vain.

LONGFORD CASTLE AND LONGLEAT.[*]

LONGFORD CASTLE is interesting in many ways. Its curious plan,—that of a triangle, with a tower at each angle,—the various circumstances connected with its origin, and its fine collection of pictures, make it interesting to those wholly unacquainted with architecture; while to those who practise that art, and to all who (like the company present to-day) are given to the study of archæology, the fact that we have the original drawings of the castle preserved in the Soane Museum is of the highest interest.

Let us first recount the building of the place according to popular tradition. The Manor of Longford belonged in the middle of the sixteenth century,—that is, in the time of Philip and Mary,—to a family named Cervington, the last of whom was a man of extravagant and dissipated habits, so much so that in course of time he was obliged to mortgage his estate to one John Webb, of Salisbury. John Webb, being unable to get the interest of his money, foreclosed in the year 1573, and the last of the Cervingtons found himself ejected from the home of his ancestors, and wandered about the estate in a condition of great misery. John Webb, who had turned him out, shortly afterwards sold the estate to Sir Thomas Gorges, a son of Sir Edward Gorges, of Wraxall, co. Somerset, and it is said that the unfortunate Cervington, who still lurked about the place, used to make his way into the house, to the annoyance and terror of the servants. On one occasion the wild and miserable man was taken before Sir Thomas himself, and, on being questioned as to who he was, told his name, and added that a Cervington was at least as good as a Gorges. Sir Thomas, moved by his sad plight, gave orders that thenceforth he was to be treated with attention and respect; but the unfortunate man shortly afterwards died miserably under an elm tree in the Coney-garth, a victim to his own improvidence.

The house thus invaded by the wreck of its former master could not have been that which we now see, for Cervington was ejected in 1573 and the foundations of the present building were not begun till thirteen years later, in 1586, and it is incredible that the poor man's misery could have been prolonged through all those years. Sir Thomas Gorges had married Helena, the widow of William Parr, Marquis of Northampton and brother of Katherine Parr, who was so fortunate as to survive Henry VIII. Lady Gorges was a Swede by birth, being the daughter of George Wolfgangus Snachenburg, and she had come over to England in the train of Princess Cecilia, daughter of Eric, King of Sweden, all of which history may be deciphered by the curious on her tomb in Salisbury Cathedral. When her second husband, Sir Thomas, thought of building himself a new house, she persuaded him, it is said, to build it after the model of a castle near her own country,—the Danish castle of Uranienburg in the Sound, which had been designed by Tycho Brahé. Sir Thomas complied with her wishes, but the site chosen for the building swallowed up the greater part of his fortune in foundations, and the work threatened to be abandoned, when by a fortunate chance one of the galleons in the Spanish Armada was wrecked near Hurst Castle, of which Sir Thomas was Governor. His lady successfully begged the hull of the queen, and this was found to contain enough treasure to complete the whole structure in the year 1591, the total cost being about 18,000*l*.

Such is the popular version of the building of Longford. How far it is authenticated, and how far it is mere tradition, I am unable to say. Let us now turn to the information we have in black and white, namely, the drawings preserved in the Soane Museum.

The drawings are by an architect named John Thorpe, who was concerned in a very great number of houses at this period, among them being Burleigh House, by Stamford Town, Kirby, Holdenby, all in Northamptonshire. Burley-on-the-Hill, in Rutland; Audley-End, in Essex; Ampthill, in Bedfordshire; Holland House; Slaugham-place and Buckhurst House, in Sussex; Losely House, in Surrey; Somerhill, in Kent; besides many others. All his drawings, bound into a book and numbering over 250, are preserved at the Soane Museum, in London. The drawings relating to Longford are on folios 155, 156, 158, and consist of a ground-plan, front elevation, and an elevation of the garden side. The ground-plan shows a triangular building with a triangular court in the centre, a round tower at each external angle, and a circular staircase at each angle of the courtyard. These features may be found to-day, but the courtyard has been roofed over and made into a fine saloon. The interior generally has been modernised, and there has been a good deal added to the house, so that it is a very different place from what it was when first built. It is certain, however, that Thorpe's ground-plan was not carried out as drawn, and we may fairly regard it as a preliminary sketch. It is otherwise with the elevation. This does not agree with his plan, but it agrees in all but a very few particulars with a view of Longford, drawn by Robert Thacker, showing the castle "repaired and beautified by Henry Hare, Baron of Coleraine, in the year 1650." It agrees so minutely that there is no doubt that this elevation of Thorpe's represents the house as it was originally to have been built, although a few modifications were introduced as the work went on.

The front that is to be seen at the present day has evidently been rebuilt, for it differs in essential particulars of arrangement from Thorpe's elevation and Thacker's view; but apparently nearly all the old features have been used again, including the balustrades, arches, pilasters, cornices, and strings. This opinion, arrived at by comparing these old views with the present structure, is borne out by information derived from the clerk of the works, who says that the stone and mortar of the arcaded part differ from that of the tower, and that the floor of the arcaded part does not rest on the tower wall, but is supported by posts and iron bands.

The conclusions, therefore, that we may come to are these:—The tower to the right of the entrance is the original work, so is also the other tower on the garden side. The entrance-front itself has been rebuilt, with the original features, arranged in a somewhat different manner. The garden side between the two towers has been almost entirely rebuilt. The interior has been re-arranged and modernised, while a large part on the north-eastern side is altogether new.

Assuming, as we may fairly do, that John Thorpe was the architect of Longford, where did he get his idea of the curious triangular plan? Did he copy the castle of Uranienburg, as stated, or did he design it himself? His drawing certainly looks like a preliminary sketch plan; it is partly in ink and partly with pencil notes. On the front side it says "Court heare," on the garden side it says "Garden heare," and on the third side "Orchard heare," all of which imply that the site was already fixed. The fact that it is a quaint and fanciful plan is in favour of its being Thorpe's own design, for his MS. book abounds in fanciful plans, and on fol. 161, that is, in close proximity to this plan of Longford, occurs another plan on the triangular system, but more matured, and a further development of the Longford idea. There is, however, no name to it, and no evidence of its ever having been carried out. If, on the one hand, an examination of Thorpe's designs leads us to the conclusion that he might very well be the author of Longford, on the other, there must be some foundation for the statement that the design was brought from Denmark; and if evidence could be given of this, it would throw a very interesting light on the source of some of Thorpe's ideas. But, whatever conclusion we adopt, we must not imagine that this is a solitary specimen of fanciful design imported from abroad. The air of the latter part of the sixteenth century was full of quaint conceits, some of which got embodied in stone, and among them was Longford. Its date is 1591. In 1593-5 Sir Thomas Tresham was building at Rushton, in Northamptonshire, his Triangular Lodge, a very much smaller building, but one containing many more quaint conceits. It is an embodiment in stone of the idea of the Trinity,—three in one. Curiously enough, on Thorpe's plan of Longford, within the triangular courtyard, is a device emblematic of the Trinity. But the Triangular Lodge was not the only emblematic building erected by Sir Thomas Tresham. About five years later, that is, in 1600, he was building Lyveden New Building, which is a cross on plan, and in all its parts symbolises the Passion. Plans of Lyveden are also among Thorpe's drawings, so that a very close relationship is established between all these quaint and curious buildings.

Longford Castle, therefore, may be taken as an example of one type of planning prevalent in Elizabeth's reign, when the object of those concerned seemed to be not so much to promote the comfort or convenience of the house as to embody some sentiment, or to work out some quaint idea to which all notions of convenience had to bend. The appearance of the plan on paper was all that was cared for. At Longleat we shall find another type of building, much less quaint but more reasonable, in which symmetrical magnificence was aimed at, but almost equally at the cost of convenience. You will, no doubt, have noticed that in the middle gable over the front entrance is carved a ship in full sail. Has this any reference to the legend of the Spanish galleon? And, if so, was it placed there in commemoration of that circumstance, or was the circumstance invented in consequence of the ship being there? On Thorpe's elevation the arched recess is shown, but not the ship; it appears, however, on Thacker's view in 1650. With regard to the rest of the detail, it is of the period: but a close examination will show that the sections of the strings and cornices are by no means orthodox, though they are very similiar to those on other buildings attributable to Thorpe.

Longford Castle, therefore, in spite of the alterations it has undergone, throws no little light upon a phase of architecture of great interest, and one which was the result of the most active period of house building which the country had ever seen previous to the Victorian era.

Longleat.

Longleat is an excellent text upon which to found a discourse on the Domestic Architecture of the Renaissance, but before doing this let us see what we know with regard to its history. Canon Jackson has already busied himself with this subject, and is in a far better position to speak on it than any one else, and it is therefore with great diffidence that I approach it.

The house was begun by Sir John Thynne,—who was the founder of the family and the purchaser of the estate,—in 1567, as shown by a book of building accounts which begins on the 21st of January, 1567, and continues till the 29th of March, 1578, during which time 8,016*l*. 13s. 8½d. was spent. Losely House, near Guildford, was building about the same time, viz., from 1561 to Michaelmas, 1569, during which time only a little over 1,600*l*. was spent; but Loseley House is not so large as Longleat. The 8,000*l*. sufficed to cover the cost of the outside of the house, except the west front and part of the inside court, but the exact extent it is difficult now to determine. Sir John Thynne died in 1580, leaving his son, the second Sir John, to carry on the work. Under his directions the balustrade that crowns the walls, many of the chimneys, and some of the towers, were built, and the screen in the hall and much of the panelling were also finished. The work was taken up by Sir John's successors, one of whom employed Sir Christopher Wren, and was continued for a great number of years. Finally, Jeffrey Wyatt came upon the scene early in the present century and blotted out all history from the inside, and from the outside too, except from the south and east fronts. It is, therefore, from them that we must learn all that Longleat has to teach us. But, before proceeding to this lesson, let us see what we know about the actual designing of the building.

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[*] A paper by Mr. J. Alfred Gotch, F.R.I.B.A., read at the Salisbury meeting of the Royal Archæological Institute, as elsewhere mentioned.

Longleat has been attributed to John of Padua; to John Thorpe, who is erroneously supposed by some to be the same man under an English name; and to Robert Smithson, who has been said to have designed Wollaton House, near Nottingham. Here are several suppositions which open up rather a wide field of controversy. Without lingering in that field for any length of time, it may perhaps be as well to give one or two facts which will dispose of some of the points in doubt. First of all, John Thorpe cannot be John of Padua, since John of Padua is recorded to have received his first grant, "Pro servitio in architecturâ et musicâ," in 1544. One of Thorpe's plans is dated 1620, *i.e.*, seventy-six years later, and it is hard to believe that an architect can have been in active practice for seventy-six years. Secondly, I am not aware that any evidence exists that John of Padua had anything to do with Longleat. Thirdly, it is certain that no evidence exists that John Thorpe was ever concerned there. Canon Jackson is my authority for this statement, which I can supplement by saying that there is no drawing in Thorpe's collection which can be meant for Longleat. We are, therefore, left to deal with Robert Smithson's connexion with the house, and with Wollaton. It is stated that the previously-mentioned building accounts show that on the 11th of March, 1568-9, Robert Symythson succeeded John More as head freemason. I have not been able to examine these accounts in detail, but, from a short inspection made with Canon Jackson some time ago, it appeared that they mention a *Richard* Smythson as freemason at 16d. a day, but do not mention Robert Smythson at all. It would seem, however, that a Robert Smithson was sent about 1567 to succeed More, the mason, but how to reconcile the difference in the names I do not know. If Richard really were the name of the Smythson employed here, he could not be the same man who is connected with Wollaton, for *his* name was Robert, as his epitaph in Wollaton Church states. The epitaph is as follows:—

> "Here lyeth ye body of Mr.
> Robert Smythson Gent.
> Architector and Survay-
> or unto the most worthy
> House of Wollaton with
> Diverse others of great
> account, he lived in ye fayth
> of Christ 79 years, and then
> departed this life ye XVth of
> October Ano Dmi 1614.

Into the rival claims of Robert Smithson and John Thorpe to have designed Wollaton, I will not enter; but this much may be said:—that a plan and elevation of Wollaton are found in Thorpe's collection, just as a plan and elevation of Longford are found, and I myself regard Thorpe as responsible for "the most worthy house of Wollaton." It is interesting to note that Wollaton was begun in 1580, the year of Sir John Thynne's death, so that it would have been quite possible for the same man to have been engaged on both buildings consecutively. But the evidence relied on by some writers,—an exact similarity of detail between the two places pointing, indeed, to a use of the same templates or moulds,—this evidence cannot be established. I have compared the sections of the mouldings side by side, and find that, though in general disposition they resemble each other, yet in particular features they are quite different; those at Wollaton could not even have been worked from an ill-proportioned sketch of those at Longleat, except in one or two cases. The mouldings at Wollaton are hardly as well proportioned, as those at Longleat. But, in spite of particular differences, there is a certain general similarity in idea between the two places, which would be accounted for by supposing the same foreman to have been engaged at both.*

With regard, therefore, to the immediate source of inspiration at Longleat we can form no certain opinion; but the ultimate source was, of course, Italy. Italian ideas permeated every every branch of art and literature at this period, but Longleat is rather a curious example of their influence, inasmuch as no other building of so early a date is so thoroughly Classic. Kirby, for instance, which was begun three years later, in 1570, is very much more English in feeling, less formal, and consequently more interesting. But Longleat, in its very formality, in its exact balance, in the rigidity of its horizontal lines, in its somewhat tame sky line, from which none of those beautiful gables spring which are characteristic of Anglicised Classic,—in all these points Longleat very aptly illustrates the effect upon English architecture of travelling in Italy. The same influence is observable in the projecting windows, which are not bay windows in the strict sense of the term, not at all like the large semicircular bays at Kirby, or Burton Agnes, or (to name earlier examples) those at the dais end of many halls in Oxford and Cambridge. Then, again, observe the circular recesses filled with busts. The busts all represent some classic personages, gods and goddesses, the Nine Worthies (as at Montacute), or Virgil, Aristotle, and Plato, as at Wollaton. Here none are named, but they are of the same family with those that are, and very sorely they must have puzzled the British workman who put them in their places.

The present plan of Longleat can tell us only one fact of historical interest, and that is that the original arrangement of the rooms became unsuitable to modern ideas, and that, consequently, it has been swept away wholesale. It is often said that the era of house-building that began in Elizabeth's reign introduced all the apartments required for modern use. To a large extent this is so. We might even go further, and add that it introduced a great many for which no modern use can be found. But we must not forget that, though there was a great multiplication of apartments, they were very unscientifically arranged. Nothing is more obvious, in visiting Elizabethan houses which are still inhabited, than the straits to which the occupiers have been put to obtain a reasonably comfortable home without destroying the venerable appearance of the house. At Burleigh a corridor has been contrived round the court-yard; at Apethorpe you have to make the circuit of the building to get from your bed to your breakfast; at Loseley the family sleep at one end and the guests at the other, with the great hall between them; at Wollaton the window-sills are so high that to sit down is almost like being in a well. Indeed, there is no concealing the fact that John Thorpe and the other designers of that time went to work on wrong lines. They produced houses into which the inhabitants had to fit themselves. They did not first ascertain the requirements of the inhabitants and then build the house to suit their comfort and convenience. Their way was the easiest. They said: "Here is my architecture, suit yourself to it." Our way is the best; we say: "Such are your habits, our architecture shall be founded on them." In the result what we lose in stateliness we gain in comfort, and those who do not have to live in such houses can freely afford to admire them, and to be thankful to those who, in spite of inconveniences, jealously preserve these magnificent memorials of the past.

Illustrations.

CATHEDRAL, TOLEDO.

WE give four views, reproduced from photographs by Laurent, of Madrid, of portions of this Cathedral, of which a long description is given in Street's "Gothic Architecture in Spain," and which is, in many ways, a very remarkable Mediæval monument.

The Cathedral is believed to stand on the site of an older one, which had been converted into a mosque during the Moorish occupation of the city, but of which nothing remains. The first stone of the present Cathedral was laid in 1227, by King Don Fernando III.; and Street was of opinion that French architects were concerned in the design of it. The French character of the older part of the work is evident enough from the interior view, in the eastern ambulatory of the choir.

The church, of which Street gives a plan, is five-aisled, and on a great scale, 178 ft. wide and 395 ft. long, and 50 ft. 6 in. from centre to centre of the nave columns. The plan is remarkably grand and simple, the transepts hardly projecting on the ground line, and the outer aisles being carried in a splendid semicircular sweep round the apsidal eastern termination. The columns are all circular, surrounded by engaged shafts; a portion of one of them is seen above the view of the side of the high altar-screen. The words "Side of the high altar," on the plate, are the literal translation of the Madrid photographer's title, which should, however, rather be "choir-screen adjoining the high altar." This gorgeous piece of fourteenth-century work only exists in this state on one side of the choir, the remainder having been continued in "Berruguetesque." Street expresses great admiration for the elaboration and delicacy of the work here.

The so-called "Gate of Lions," only named so, as will be seen, from the Renaissance addition of the lion-crowned columns supporting the grille, is the doorway of the south transept. The principal western doorway, shown in another illustration, is work of the early part of the fifteenth century, when the west front was commenced; but all the upper portion of this front (as will be gathered from the story immediately over the gable in the illustration) was altered and modernised in later times.

COMPETITION DESIGN FOR EDINBURGH MUNICIPAL BUILDINGS.

We give this week another of the designs submitted in this large competition, that by Messrs. Foster & La Trobe, of Bristol. The authors have duly appreciated the importance of the aspect of the building towards Cockburn-street, as shown in their sketch perspective of it from this point of view.

HOUSE IN SUNDRIDGE PARK, BROMLEY, KENT.

This house, which is in the course of erection, is situated on rising ground, there being an extensive view from the south windows.

Mr. G. H. Lay, of Bromley, is the builder, the estimated cost being rather more than 2,000*l*.

The external walls are faced with red bricks from Dunton Green, Kent, and the roof is to be covered with Yorkshire tiles.

Mr. Evelyn Hellicar, of Bromley, Kent, is the architect.

WIMBLEDON BRANCH OF THE LONDON AND SOUTH-WESTERN BANK, AND BUILDINGS ADJOINING.

These buildings have been erected from the designs of Mr. J. S. Edmeston, Mr. H. Johnson being the builder. The amount of the contract was 11,150*l*. The walls externally are of Fareham brick, with all mouldings and enrichments of red terra-cotta supplied by Mr. J. C. Edwards, of Ruabon. The other buildings consist of shops, with a private residence at the corner.

The bank contains, on the ground-floor, banking hall, with waiting and manager's rooms, and in basement, fireproof strong-rooms, lavatories, &c. The upper part of house arranged as manager's residence.

The mosaic pavements are by Messrs. Rust & Co. The bank fittings, partitions, and joinery, all in polished teak, are by Messrs. Bright & Co. Mr. Wm. Tookey was clerk of works.

Association of Municipal and Sanitary Engineers and Surveyors.—A Northern Counties District meeting of this Association is to be held at Newcastle, this Saturday, Aug. 13. The members will assemble in the Council Chamber at the Town-hall at 11.30 a.m., by kind permission of the Mayor. The first business will be the election of a District Secretary. The following paper will be read and discussed, "The Floating Hospital of the Tyne Port Sanitary Authority," by Mr. W. G. Laws, City Engineer, Newcastle. The members will afterwards adjourn to the Exhibition, where, in the North Court, a model will be seen of the Floating Hospital. As there are many objects of interest to municipal engineers in the Exhibition, it is proposed to spend the rest of the day there.

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* We have recently stated (p. 165 *ante*) that the researches of the present owner of Wollaton may be considered to have put an end to the claims of Smithson in connexion with it, and established those of John of Padua. —Ed.

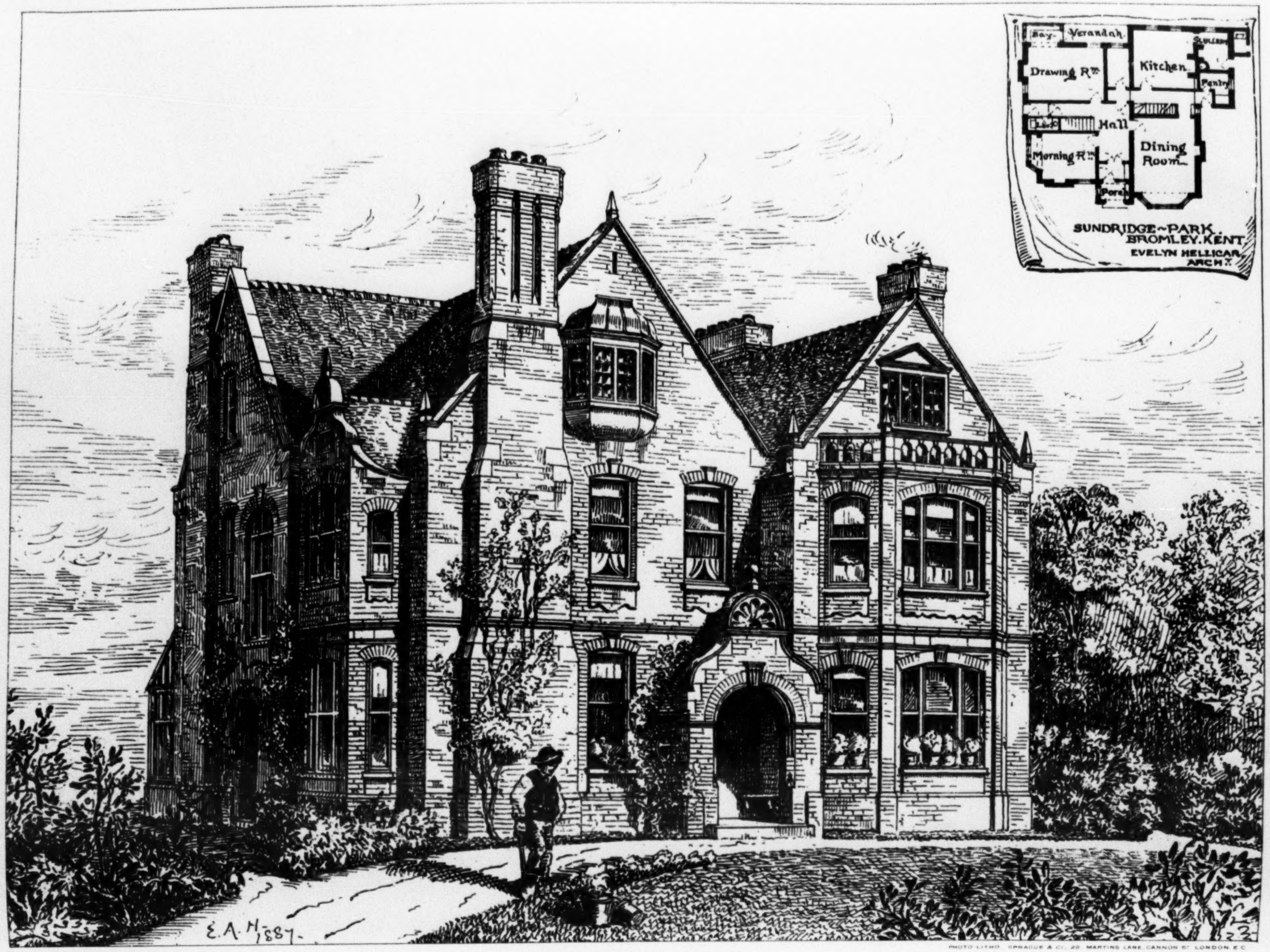
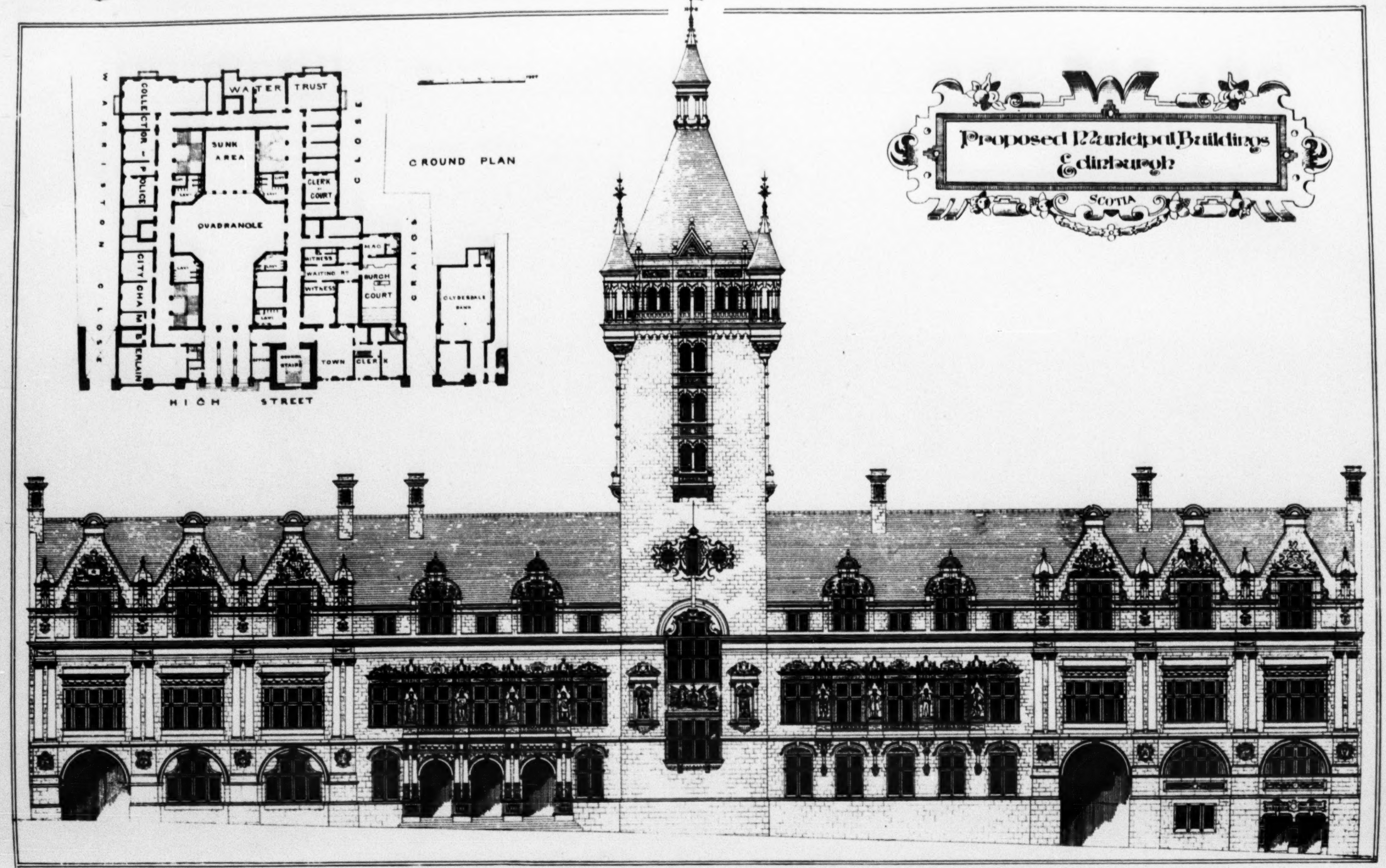

Bay
Verandah
Drawing Rm.
Kitchen
Scullery
Pantry
Hall
Dining Room
Morning Rm.
Porch
SUNDRIDGE~PARK.
BROMLEY. KENT.
EVELYN HELLICAR,
ARCHT.
E. A. H, 1887.

PHOTO LITHO. SPRAGUE & CO. 22, MARTINS LANE, CANNON ST. LONDON. E.C.

HOUSE, SUNDRIDGE PARK, BROMLEY, KENT.—MR. E. HELLICAR, ARCHITECT.

PHOTO-LITHO. SPRAGUE & C°. 22, MARTINS LANE, CANNON S^T LONDON, E.C.

HOUSE, SUNDRIDGE PARK, BROMLEY, KENT.—MR. E. HELLICAR, ARCHITECT.

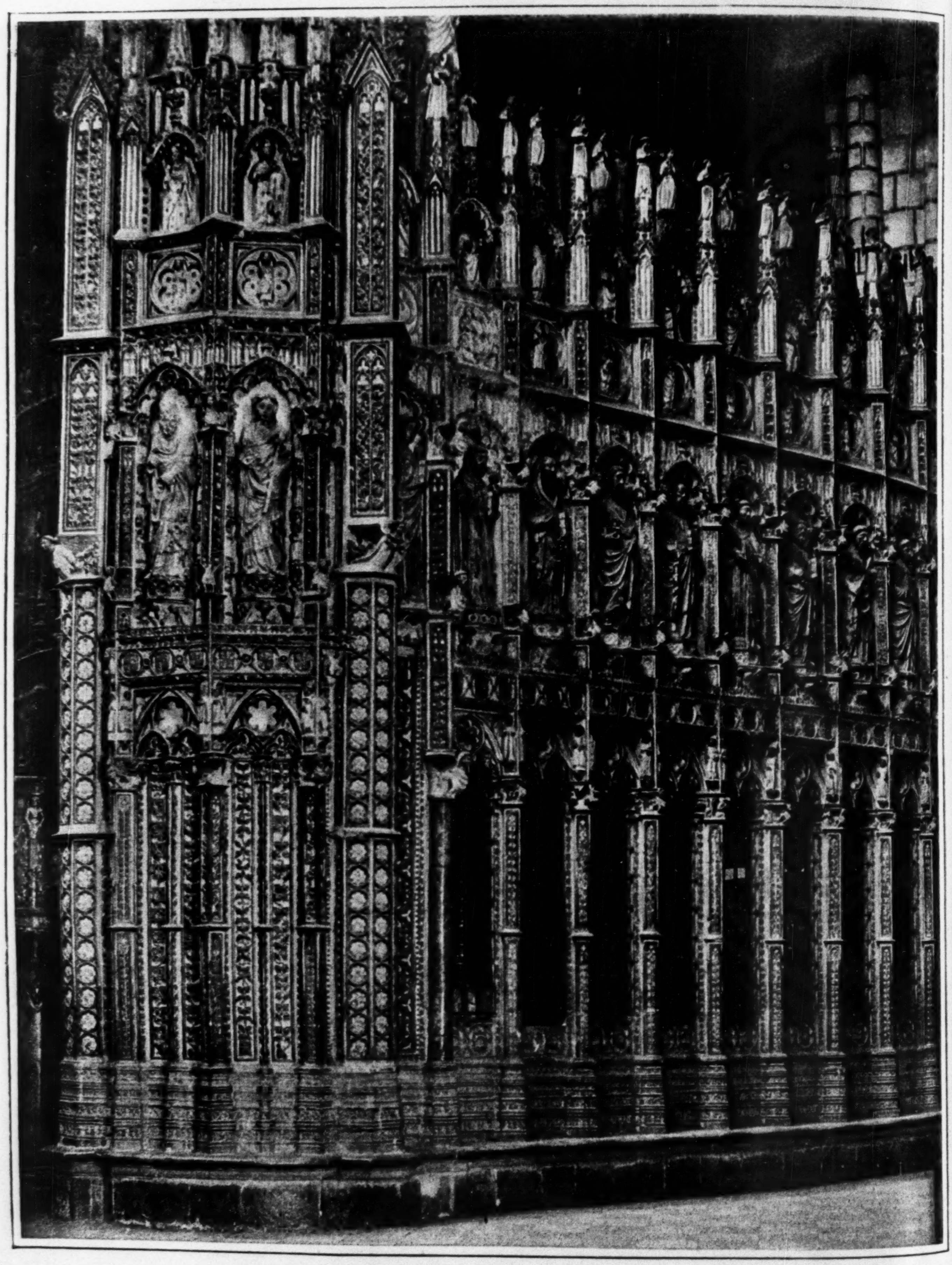

Proposed Municipal Buildings
Edinburgh
SCOTIA
GROUND PLAN
WATER TRUST
COLLECTOR
POLICE
CITY CHAMBERLAIN
SUNK AREA
QUADRANGLE
CLERK OF COURT
WITNESS
WAITING RM
BURGH COURT
MAG.
STAIRS
TOWN CLERK
CLYDESDALE BANK
WARRISTON CLOSE
CLOSE
CRAIGS
HIGH STREET

C F Kell Photo-Lith & Printer 8, Furnival St Holborn, London E.C.

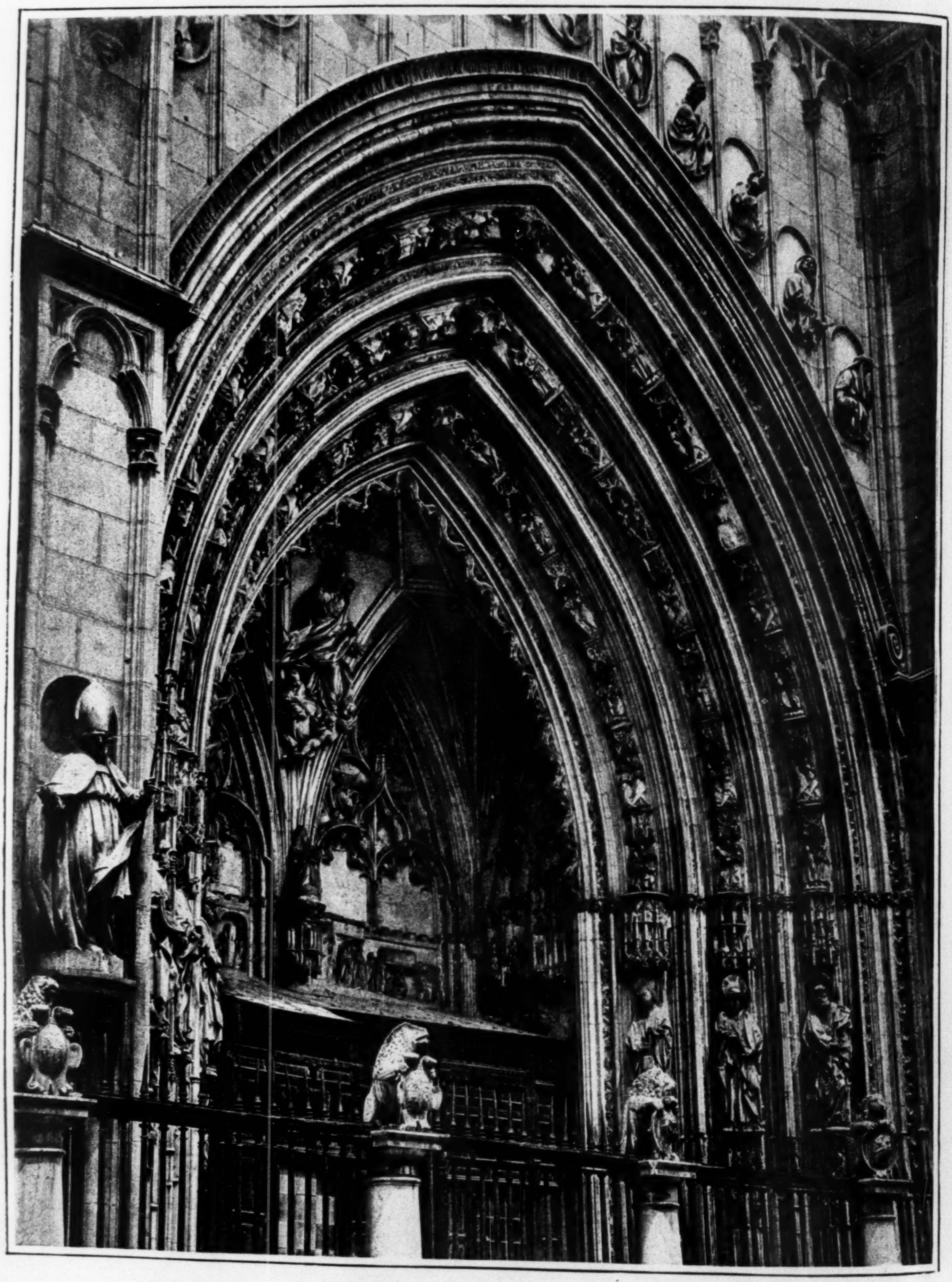
EDINBURGH MUNICIPAL BUILDINGS COMPETITION.—DESIGN SUBMITTED BY MESSRS. FOSTER AND LA TROBE.

ELEVATION TO HIGH STREET.

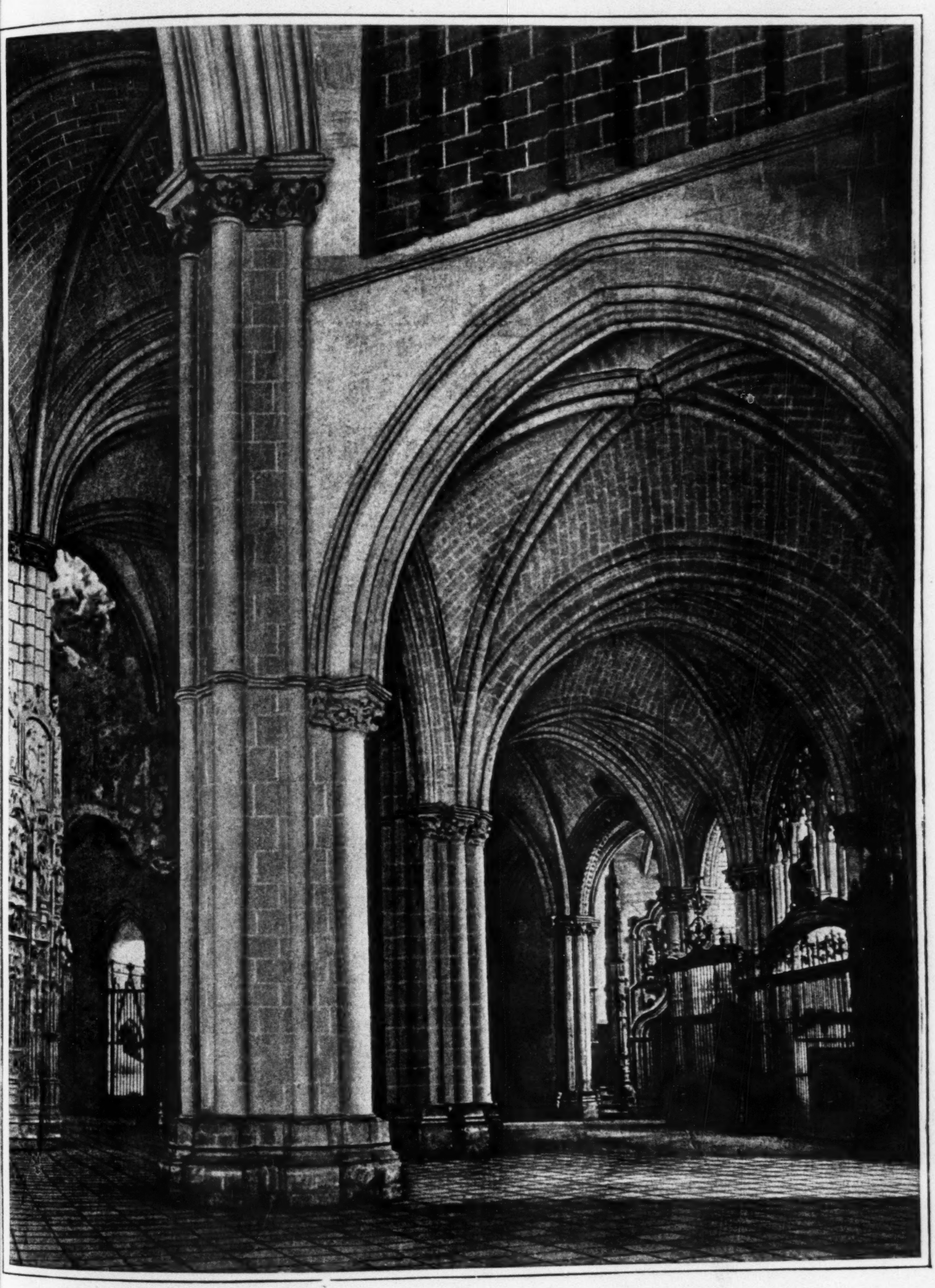
Elevation to High Street.



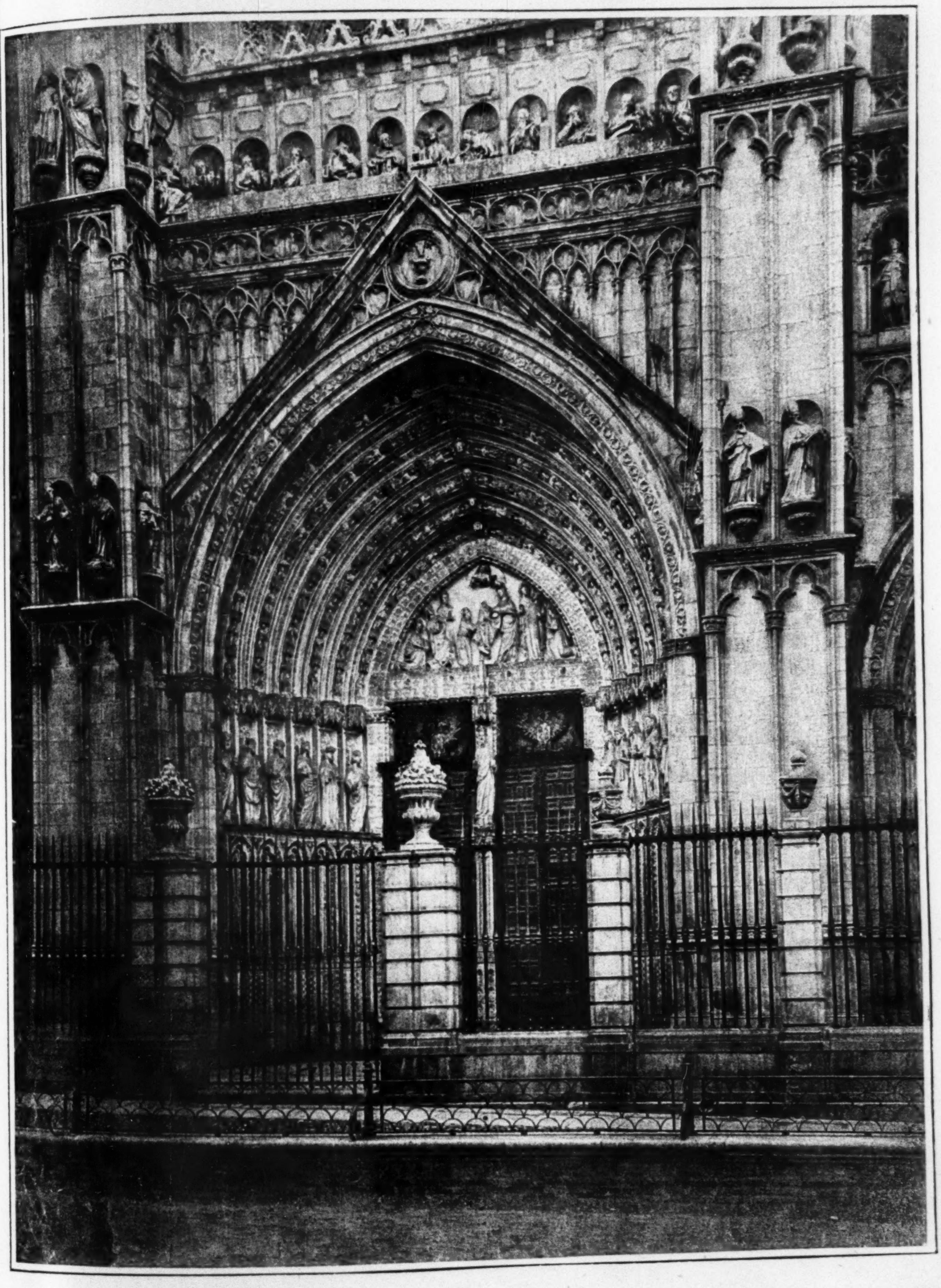
TOLEDO CATHEDRAL: SIDE OF THE HIGH ALTAR.



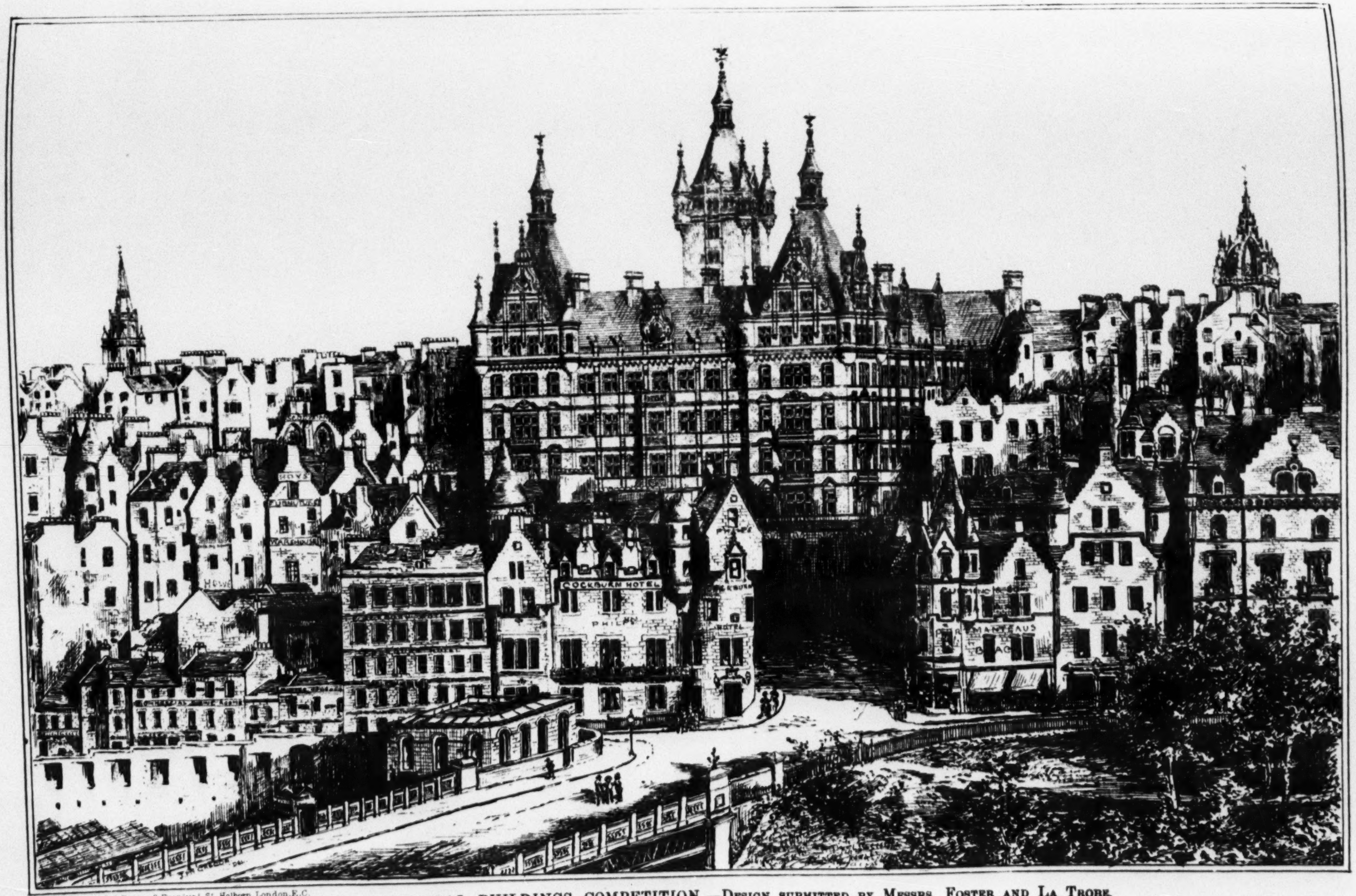
TOLEDO CATHEDRAL: THE GATE OF THE LIONS.



TOLEDO CATHEDRAL: INTERIOR VIEW.



TOLEDO CATHEDRAL: PRINCIPAL ENTRANCE.


COCKBURN HOTEL
PHILP
HOTEL
MANTEAUS

C F Kell Photo-Lith & Printer 8, Furnival St Holborn, London, E.C.

EDINBURGH MUNICIPAL BUILDINGS COMPETITION.—Design submitted by Messrs. Foster and La Trobe.

Perspective View towards Cockburn Street.

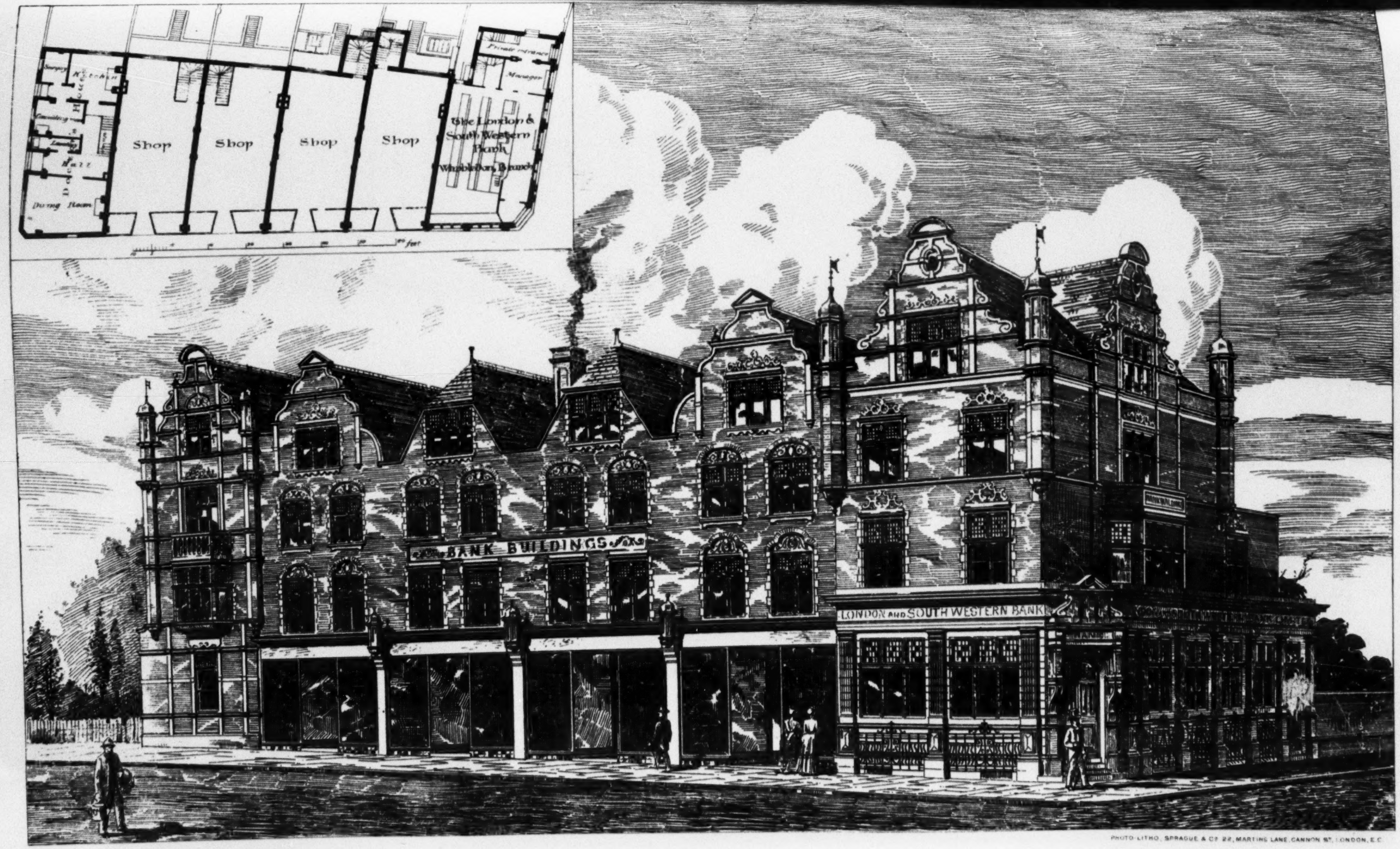

Scullery
Kitchen
Hall
Dining Room
Shop
Shop
Shop
Shop
Private entrance
Manager
The London & South Western Bank Wimbledon Branch
feet
BANK BUILDINGS
LONDON AND SOUTH WESTERN BANK

PHOTO-LITHO. SPRAGUE & Cº 22, MARTINS LANE, CANNON Sᵀ, LONDON, E.C.

BANK BUILDINGS, WIMBLEDON.—Mr. J. Edmeston, F.R.I.B.A. Architect.

CREMATION.[*]

The disposal of the human body after death has always occupied the earnest attention of the living in all countries, and it may be that the method of simple exposure as against burial was the outcome of much cogitation and dispute among the ancient peoples who practised it. Who can prove that the Phrygians and other races who hung their dead upon the limbs of trees; the North American Indians, who to this day expose their rudely bandaged dead relatives on tall platforms in the prairie; the Syrcanians, who left their dead in the near forests to the wild dogs to devour; the Parsees, who from time immemorial have laid their dead upon gratings on the summit of high "towers of silence" for the vultures, did not adopt these various systems of disposal of the dead after the most profound consideration, apart from any semi-religious or superstitious bias? It was surely easier for these ancient peoples to inter the dead, but the "far-off descended ray" apparently taught the very earliest born races to protect themselves from the dead and to consider the earth to be the very property of the living. The practice of the exposure of bodies to the attack of carnivorous birds, beasts of prey, wild dogs, crocodiles, and the like must have been instituted, not from the want of land for interment or labour to dig graves, but from some inborn consciousness that the earth was required for far nobler purposes than as a storehouse for the putrefying dead . . . .

It may almost be said than when mere exposure of the dead ceased to satisfy, and when cave-burial became obsolete, inhumation or earth burial by contact was introduced, with all its inherent drawbacks. Burial in the earth has not, I think, existed from the very dawn of our planet's life; certainly no one can absolutely prove this. But it is a very ancient practice, and was the easiest means of hiding the dead out of sight. It matters not how controversialists may decide this point, and it is sufficient to admit that burial in the earth is of remote antiquity. I do not think that it was resorted to for reasons of health, but for reasons of simplicity, expediency, and economy.

Terrible outbreaks of death-dealing disease have followed indiscriminate and injudicious burial. It would nauseate you to quote a thousandth part of the number of cases which have been recorded where the depurating power of the earth has been almost *nil*. Earthworms continually, from their very nature, upheave the germ-laden soil from below, with the usual consequences. I need only note some instances where misguided burial has been followed by dire consequences. I will not mention the reappearance of the plague at Modena, where 600 years before the victims of a plague were interred, and how similar disturbances of the grave-sites caused immediate outbreaks of disease, or enhanced the virulence of epidemics such as cholera and the like. This happened at London in 1854, although the pits had been dug and filled up for almost 200 years. In 1843, when a parish church near Stroud, in Gloucestershire, was in process of rebuilding, the superfluous soil of the burial-ground was disposed of for manure to the villagers, and the result was nearly a decimation of the place. The outbreak of the plague in Egypt in 1823 was traced to the opening up of a disused burial-ground about fourteen miles from Cairo, and thousands perished in consequence.

M. Pasteur states that he has obtained, from dug-up earth, germs of splenic fever as virulent as when the animals died twelve years previously.

A recent investigation was made in the cemetery of Rio de Janeiro, scarcely four years ago, upon earth taken about spade deep from graves where victims of yellow fever had been buried some twelve months previously, and this soil was found to contain "myriads of microbes," self-same with those present in persons stricken with the same pest at the time of the excavation. A healthy guinea-pig was incarcerated in a space over which earth taken from a grave was sprinkled, and in five days the animal was dead, its blood being found to be "literally crammed" with the germs of the disease in various stages of evolution. It will, therefore, be conceded that no argument requires to be sprung in favour of cremation for the relics of humanity when the same thing occurs in respect of the remains of the lower animals.

It is a fortunate thing for us that the majority of the animals which now perish from disease in our crowded towns are no longer buried in the earth, but are scientifically destroyed, and even some valuable products recovered. But this was not so in the olden times, when the corpses were merely thrown into a hole in the neighbourhood of the cattle-markets. It is almost impossible to excavate any distance in Shepherds' Market, now Mayfair, London, without coming across numberless relics of animals slaughtered from motives of health for their own race, but interred to the detriment of their owners.

I do not think cremation will ever become universal, and I am equally satisfied that burial in the earth never was a universal practice. Since the abandonment by gradually civilised and growing nations of disposal of the dead by exposure, desiccation, embalming, and the like, burial in the earth followed, and as the ancient world was opened up to the new, the practice of cremation in the former was brought to the knowledge of newer races, and eventually enthusiastically taken up by the Greeks and Romans. And both burial and cremation were practised at the option of the relatives, and this accommodation of parties must always, I think, continue to rule. Socrates was made to say that he had no care whether he was buried or burnt, but this apathy was rarely exhibited, and soon the rite of cremation was exalted to such an extent that certain of the citizens were forbidden it. All suicides, all persons killed by lightning, and all the still-born, were excluded from the pyre.

When the star of Christianity climbed the horizon, it became necessary for its teachers to adopt some distinction between Christians and Pagans, and very evidently the Christian leaders decided upon discarding cremation, and insisting upon the practice of inhumation. A wide-spread schism followed, and the rupture became perfect when the system of burial in and around the churches began to obtain with the community. This practice of crowding the churches and churchyards with the dead was carried to such an extent, that about 1843 the burials in London around the churches averaged in some cases 1,204 per acre; in others, 1,278 per acre; in several, 1,560 per acre; in one case, 2,323 per acre. This was surely burial around the churches with a vengeance!

In ten years following 1852, when Orders in Council were issued to stay this monstrous evil, some 4,000 old burial-grounds were closed, and the good work of regulating interments is still carried on. Within the same space of time some 400 local Burial Boards were constituted, and this number has been far enhanced. Then necessarily followed the institution of cemeteries, and the metropolis alone has now one acre of burial ground for every 1,000 inhabitants, although, of course, this is partly taken up by roads and shrubberies. At present London has twenty-two cemeteries, with an aggregate of 2,210 acres.

A cemetery should have a close and yet dry, porous soil, such as would allow the rain, and the air which accompanies it, to pass down to the level of the lowest interment. With a soil like this, the depth for burial might be extended to a dozen feet, and everything save the larger bones would disappear in a dozen years. When a cemetery soil is very dense and clayey, it is impervious to moisture, and therefore objectionable. Its drawbacks can be partially redeemed by deep cross drains with gravelled bottoms, and by pipe drains being laid between the bottom of each grave-space. The spaces nearest the deep drains should be first used, gravelled at the bottom, and each subsequent grave, after being gravelled at the foot, should be connected with the other graves, and all drain into the cross drains, the outfall of which should be carefully chosen. Graves in clay formations are sometimes improved by the admixture of gravel and sand when refilling the graves. The cost of these proceedings is, however, very great, and it cannot be said that any commensurate success ever attended it. I have been informed that the cemetery instituted by the Corporation of this city [Leicester] is formed of a stiff and almost impervious clay, and that a tenth of a million of dead have been laid in it. I hope that matters are not so unencouraging as this, however.

Just as wheat may be said to be the ultimatum of all grasses, I think that cremation will be final and the chiefly chosen improvement upon burial. Where the earth is suitable for due resolution of the body, nothing can perhaps be preferable, but most unfortunately this consummation cannot be always achieved, and even where a suitable soil can be obtained there are dangers of air pollution and fouling of water, which have always to be strenuously guarded against, as many a community knows.

Since the resuscitation of the practice of cremation, brought about in our country by the telling works of Sir Henry Thompson, several ideas have been introduced to public notice with a view of minimising the dangers known to be attendant upon any promiscuous system of interment. I will only notice one, and that is what has been called "earth-to-earth" interment, and the use of wicker baskets in lieu of coffins. I can see no improvement here upon what was prevalent with our forefathers, when no coffin was used at all. Winding-sheets alone were in use until the sixteenth century, and in the Vestry Minutes of St. Helen's, Bishopsgate, London, there occurs, under the date of March 5th, 1564, an order that no one shall be buried within the church unless the corpse be confined in wood. Up to the present time, many old families in Ireland inter their dead with shrouds only. At the conclusion of a paper which I read at York in September last,[*] the Dean of York mentioned incidentally that at Easingwold, close by, there was a parish coffin, which had been in existence for several hundred years, whereby bodies were conveyed to the grave, and there consigned without enclosure to the earth.

It is sickening to read, as I have done in the Records of the Patent Office, the various improvements which have been laid before the public from 1781 to even last year,—I mean sickening to any one who has formed a high estimate of his fellow-man. Fancy plans for all kinds of coffins in stone, marble, granite, slate, cement, porcelain, earthenware, bitumen, asphalte, *papier-mâché*, peat, indiarubber, iron, and glass being foisted upon us! An enclosure in lead was the parent of all these strivings after a long preservation of the dead, and this is now becoming altogether condemned, seeing that it robs the earth of its very own. The wicker-basket enclosure is no innovation, and should have a fair field, but its application must be very limited; and it is impossible to see how a body which has perished from, for instance, bad confluent small-pox could be laid in the earth without detriment. I opine that all who have perished from contagious disease, and all the unclaimed dead, should be compulsorily reduced to ashes at the nearest crematory. And, in order that such conveniences should exist, I would feel inclined to recommend that for the future, at all events, every new or enlarged cemetery should be compelled to erect a crematory of some economical kind on its grounds, to carry out such cremations, as also to afford optional cremation to those desiring it,—those who desire when dead to leave their mother earth not worse than they found her.

Cremation is variously practised now, but in former times the funeral pyre was most resorted to. The burning ghauts of India give an example of this at the present day. At the present moment the reform wave of cremation has reached even the Mauritius, and, failing a proper crematory, the people preferring cremation are having recourse to the common pyre. In some parts of Japan the body is seated, and after the body has been surrounded by the wood the orifice is closed, and the body is reduced to ashes. In January of this year an exactly similar cremation took place in Russia, when the remains of the Lama, or Grand Priest of the Calmucks, was consumed.

To describe even a fiftieth of the various methods of cremation which I have in my possession would weary you.

The systems of cremation now in use may be said to consist of the Gorini, the Venini, and the Siemens methods. There are others, but it would serve no purpose for me to explain them to you. I have seen the various systems in use at various places abroad, and chose for use by the Cremation Society of England, which is a learned and not a trading society, the Gorini system, and I was instructed to erect one at their grounds, St. John's, Woking, Surrey, which I did. As yet no temple or chapel surrounds the crematory, but that can only be a question of time.

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[*] From a paper by Mr. W. Eassie, C.E., F.L.S., F.G.S., &c., read at the Leicester meeting of the Association of Municipal and Sanitary Engineers and Surveyors.

[*] "The Economy of Cremation." See *Builder*, Oct. 2, 1886.

The procedure in the Gorini system may be shortly stated to be as follows:—A fire is first lighted in the chimney close to its base, and through this all smoke and evolved gases are destroyed, thus precluding the escape of any deleterious products which may have escaped from the first combustion in the crematory chamber. A fire is then lighted in the furnace portion of the crematory, and this is chiefly composed of wood fagots, with a sprinkling of anthracite coals, and the heat from this passes through flues under and above the crematory chamber, where the body is placed. When the reception chamber has been sufficiently heated, the body is introduced, and is consumed in little over an hour, the residuum being pure white ashes. The tray is withdrawn after the chamber has somewhat cooled down, and the ashes reverently deposited in a suitable receptacle. On the Siemens system, which is also represented, the requisite amount of destructive heat is first of all generated by combusted fuel, the flame from which imparts most of its heat to the fire-brick or regenerator chamber, and, when the apparatus has been in operation sufficiently long, this fire-brick and crematory chamber become of the usual white heat. The tray containing the body is then slid along the rollers, shown on the right of the plan, into the crematory chamber, atmospheric air is laid on, and when the ashes have fallen into the receptacle below they are inurned.

The progress of cremation within the last few years has been very rapid, and there now exist scientifically-constructed crematories at Woking, England; at Gotha, Germany; at Milan, Lodi, Cremona, Varese, Udine, Padua, Brescia, and Rome in Italy; at Geneva, Switzerland; and at New York, Buffalo, and other places in America. France is also completing an extensive establishment in Paris; and other countries, such as Holland, Belgium, and Sweden, only await a recognition of the right to perform cremation when it is sought for.

The licence will come in good time to those who work and wait, as we did in England, until it was manifest that there was no legal bar to the reformed practice. About twenty-five cremations have taken place in England, the last of them being that of a retainer of Maharaj Sir Pertab Singh, of Judhpore, India, who himself, with a suite, attended to witness the ceremony, and who removed the ashes afterwards for immersion in water, as he explained to me, according to Hindoo custom.

The cost of cremation varies, according to the number cremated with one heating of the crematory. But it varies from 6*l*. to 2*l*., the former sum ruling in England, where succeeding cremations have not as yet occurred. As to the custody of the ashes, they have chiefly hitherto in England been removed by the relatives, and interred in churchyards or vaults. But the desirable practice would be to collect them for a given time in a columbarium attached to the crematory, and after twenty years, if not claimed then, disposed of upon the ground. There seems to be a consensus of opinion in favour of this, because no good could accrue from the preservation of ashes when none of the family care to pay a fee for further conservation. Many persons simply specify that the ashes shall be strewn upon the earth.

Very much nonsense has been spoken and written upon the possible effects resulting from the destruction of bodies by fire, and the asserted loss of ammonia resulting therefrom was but one of the many bogus objections. With an audience such as this I would not venture upon the religious objections made, because they do not merit a moment's attention, and are puerile to a degree. There is also a series of sentimental exceptions taken to cremation, but they none of them rise even to the level of merest platitudes.

The Cremation Society of England, of which I have been both Hon. Secretary and Hon. Engineer from its commencement, was formed to promote the objects set forth in the following declaration:—

> "We disapprove the present custom of burying the dead, and desire to substitute some mode which shall rapidly resolve the body into its component elements by a [illegible]cess which cannot offend the living, and shall render [illegible] remains absolutely innocuous. Until some better [illegible]hod is devised, we desire to adopt that usually known [illegible] cremation."

The conditions of membership are:—

> "I. Adhesion by signature to the above declaration.
>
> II. The payment of an annual subscription of one guinea, or a single payment of ten guineas.
>
> III. The payment of ten guineas, with an obligation from the Society insuring cremation after death."

Much has been said concerning the possibility of cremation becoming an inducement to commit crime by means of poison; but, with the safeguards now taken by the committees where cremation is carried out, no concealment is possible. People seem to forget that for one body presented for cremation in possibly 5,000 there could be no possible mistake as to the cause of death.

The securities demanded by the English Society are as follows:—

> "(*a*) An application in writing must be made by the friends or executors of the deceased,—unless it has been made by the deceased person himself during life,—stating that it was the wish of the deceased to be cremated after death.
>
> (*b*) Two certificates from duly-qualified medical men are required relative to the cause of death, one, at least, of whom must have attended the deceased."

These must satisfy the Council of the Society or their representative, and in some rare or doubtful case an autopsy might be desirable. Several autopsies have already been made by orders of the friends of the deceased themselves previous to cremation.

A branch of the Cremation Society of England has been formed in Leicester by some very influential citizens, and will be certain to prosper.

In the discussion which followed, there was a unanimous consensus of opinion that cremation was the most sanitary means of disposing of the dead, especially in large towns and thickly-peopled countries.

THE NEW TEDDINGTON FOOT BRIDGE.

Mr. George Pooley, C.E., has been appointed engineer for the foot bridge which is about to be constructed across the Thames at Teddington. The structure will consist of two distinct bridges, one over the Thames, adjoining the Angler's Rest Hotel, and the other over the lock cut. The bridge over the river will be a suspension bridge of one whole span of 160 ft. adjoining the Teddington side and one half span of 80 ft. next the island. The bridge will have a clear minimum headway above the mean water level of 12 ft. The suspension part of the structure will be carried upon four steel wire cables, each 7½ in. in circumference, guaranteed to sustain an ultimate strain of 200 tons each. The footway is 6 ft. wide in the clear, and the bridge is stiffened on either side with wrought-iron lattice girders. The bridge over the lock cut will consist of wrought-iron lattice girders of a clear span of 99 ft., the abutments being of Portland cement concrete, furnished with flights of steps to enable the requirements as to headway laid down by the Thames Conservators, namely, 12 ft. clear headway at the towing-path and 18 ft. clear headway above water level of lock cut, being complied with. The sanction of the Thames Conservancy has been obtained to the erection of the bridge, and the plans have been approved by the Local Government Board. It is much to be wished that some effort may be made to produce a bridge of picturesque appearance and such as will not be a disfigurement to the river; but we fear there is little hope of this except so far as this, that a suspension bridge must always present a graceful curve in its main lines, the forces of Nature themselves providing for this. The iron girder bridge we regret to hear of; all the iron structures put over the Thames have been more or less detestable in appearance. In the old wooden bridges at various points on the upper Thames there is an obvious effort and intention to do something not only durable but picturesque; and the new granite bridge at Putney is really a fine one, though it makes no attempt at being architectural; it is built in a manner and with a material which must look impressive if left to itself. But when an engineer gets hold of an iron girder bridge there is an end of the picturesque, and we fear it will be the same here as in other parts of the river.

Eton College.—The governing body have definitely decided on the plans for a new block of buildings which will stand on the site of the old mathematical school, facing the laboratory. The buildings will form a square, and will contain, beside several class-rooms, a lower chapel, a lecture-room, and a museum. The work will be begun at once, and can hardly be finished under two years.

THE WORK AT THE FORTH BRIDGE WORKSHOPS.

We take the following from Mr. Malcolm Wood's paper on the "Forth Bridge," read at the recent meeting of the Institution of Mechanical Engineers:—

"The procedure in the shops may be described as follows. The flat plates and bars are first straightened. The plates to be curved are heated to a uniform red heat in a gas furnace, and while red hot are moulded in dies under hydraulic pressure to the required form, stacked and coated with ashes, and allowed to cool slowly and equally; any subsequent warping is taken out by placing them again in the press when cold, and giving them a final squeeze into the correct shape. The butts of the bars are cold sawn, and the edges and butts of the flat plates are planed in the usual manner. The ends of the curved plates are planed in a novel form of machine, in which the tool travels in a circular path readily adjusted to the radius of the curved plate. On completion of the planing, the plates are taken to the tube yard, and are built up round the longitudinal ribs and internal stiffening frames, which have previously been fitted together in moulds to the exact diameter required, so that the plating of the framing at once gives the tube its proper form. The plates are in 16 ft. lengths, and break joint alternately over the stiffeners at 8 ft. intervals. Means are adopted to keep the tubes in line while the rivet holes are pierced by a travelling annular drilling frame, which is mounted on wheels and carries a boiler and engine driving ten drills by cotton ropes. A pair of drills are attached to each bed; and as the beds can traverse the circumference of the tubes, while the drills can traverse the length of the beds, the whole outside of the tube is commanded, and the holes are completed with accuracy to ensure their precise coincidence when the parts are rebuilt at the site. As fast as each section of 8 ft. length is finished, the machines are propelled along the rails to take up a new position; they thus travel gradually in successive stages over the whole length laid down. The tee and trough-shaped parts are built together in the shops, and the holes are drilled by adjustable vertical and horizontal drills, fitted to a travelling carriage; the power is transmitted to the machines by ropes from the shop shafting. Numerous radial machines are also in use for the secondary parts. For dealing with special parts, many ingenious and somewhat novel workshop appliances have from time to time been brought into use, beyond those here mentioned. All the parts of the junctions are carefully fitted together in the yard in the exact positions they will relatively occupy in the bridge. After each member has been prepared, the pieces are painted, marked, and stored until required for erection."

MASONS' MARKS AT WESTMINSTER HALL.

Sir,—These masons' marks were monograms representing the name of the mason who worked the stone. The mark was cut on the stone to distinguish it as having been worked by a particular man, and was entered in the measurer's book, the measurement and price being placed against it. For moulded work the mark would be cut on the bed of the stone, not on the face. It must be noted that the marks for the most part are straight lines, such as could be cut by a plain chisel, and the majority form angles. These forms could be nicked in at once, without extra trouble, such as must be used in cutting curves: I, in fact, doubt such curved forms as being true masons' marks. Some stupid egotist, to be singular, may, however, have used them.

At the Custom House, Liverpool, 1832-3, I worked as a youth, and the ashlar stone buried in the foundation were marked as at Westminster Hall, at Heidelberg, and at our monasteries. At the Custom House the masons claimed the stones for working in due rotation, each man's mark being entered in a book kept for the purpose. When the stone was worked the mark was cut upon it, and it was measured, entered up, and was paid for to the mason by his own name, which the mark represented. A triangle might be John Smith, a double triangle John Jones, the arrow James Stout five points Thomas Williams, and so on.

In Freemasonry some of these marks may have mystic meaning. I, however, am in ignorance as to this. The incised cut with a plain chisel was the easiest form to make, and admitted of a large variety of compound forms, as shown on the page of the *Builder*. But the whole of this explanation is only a repetition of a very old story. ROBERT RAWLINSON.

SIR,—It will be interesting to Freemasons to note that, of the masons' marks shown on p. 215 of last week's *Builder*, only about one-third have an odd number of points, while the other two-thirds have an even number. Some imagine the latter are not proper masonic marks, or at least indicate an inferior status. I doubt such an idea is a mistake. In Scotland, masons used to pay for getting or choosing their marks, and having the same recorded in the lodge-books. Entered apprentices had their marks, which were "booked," as well as those of the fellows of craft and masters.

W. P. BUCHAN.

ASPHALTE AND CONCRETE FOOT PAVEMENTS.

SIR,—The author of the paper on "Asphalte and Concrete Foot Pavements," recently read before the Association of Municipal and Sanitary Engineers [see *Builder*, p. 165, *ante*], describes with more or less minuteness the great care required in manufacturing asphalte. The necessity for guarding against the use of spurious materials, the immense difficulty of preventing unsightly cracks, the marked manner in which kerbs are tilted by it, the effects of the sun upon its surface in raising it in irregular lines, its unfortunate power of conducting heat, to the great detriment of the concrete, and the length of time water remains on its surface; and these particulars constitute a grave indictment against asphalte, while many of the charges apply with equal force to *in situ* pavements. The condemnation of both, however, would have been more complete if the facts had been added, that the cost of relaying trenches is from four to eight times as great in these materials as in slab pavements, and that neither asphalte nor *in situ* pavements can be repaired, but when worn down in the lines of greatest traffic, they must be renewed. Even more interesting data would have been obtained if the author's inquiries had been extended to those parishes where the best asphaltes have sometimes lasted only six, eight, and ten years, and that in streets of comparatively light traffic. In a recent report by Mr. Lovegrove, M. Inst. C.E., several such instances are related, and doubtless the experience of other surveyors could have been had for the asking. Important information as to the failure of many *in situ* paths which were laid on the most approved principles could also have been obtained in a similar way.

Practical members of the Association will probably be of opinion that the space in the paper occupied by ancient history and chemical analysis might with advantage have been left blank, and that the elaborate geological quotations could have been spared to make room for statistics of traffic actually sustained by the various kinds of pavements in a number of streets, and the effect of traffic upon them, together with a few simple calculations as to the approximate cost of each material per million or hundred millions persons passing over them.

The writer of the paper has been careful to inform us of the doubtful statement that when stone has worn 1 in. its useful life is over, but he has omitted (unintentionally, no doubt) to say what value is left in asphalte or *in situ* pavement when worn only ¾ in. Again, he has noted with exactness tests of tensile strains which he did not witness, and with a marvellous ear detected discord in, and been annoyed by, the "sound of the footfall" on slabs, while he has been studiously silent as to the sloppiness of asphalte and *in situ* pavements in wet weather, when worn down below the kerb-level.

In making these few remarks, I have avoided obtruding my opinion as to which is the best material for footways, for the reason that it appears to me we have had more than enough opinions, and that in future references to this subject, it will be better to simply give the data necessary for forming opinions, and so avoid giving any of the companies which supply these materials cheap advertisements, and prevent the suspicion being aroused that our papers emanated from an asphalte office or a stone yard.

A. M. HISCOCKS, C.E.

HOUSES FOR EARTHQUAKE DISTRICTS.

SIR,—Can any of your readers who happen to have had experience in house building in districts affected by earthquakes, make any suggestions as to the safest method of construction?

My own idea would be a very low building, timber-framed, and filled in.

R. KNILL FREEMAN.

Bolton-le-Moors.

PROVINCIAL NEWS.

Birkenhead.—A lecture hall in connexion with and contiguous to the Hamilton Presbyterian Church, Laird-street, Birkenhead, was opened at the end of July last. The size of the hall is 40 ft. by 24 ft., with wagon-headed ceiling, finished in pitch pine, and it has sitting accommodation for nearly 200. Mr. W. H. Forde was the contractor, and the cost about 450*l*. Mr. James N. Crofts, of Liverpool, who also designed and carried out the church a few years ago, was the architect.

Oldham.—New buildings for the use of the Salvation Army in Oldham have just been inaugurated. They are situate in Union-street, and the accommodation comprises a large main hall to seat 3,000 persons, a smaller one, intended for week-night services, capable of accommodating 900 persons, a shop, several retiring-rooms, boiler-house, heating-chamber, and the usual necessary appurtenances. The front is of red brick, with stone dressings, with a tower running up each side of the main hall, finished with battlements. Tudor Gothic has been adopted for the architectural treatment. The contractor was Mr. Councillor Holt, of Cheetham, Manchester. The brick and stone work was carried out by Mr. Thomas Whitehead, of Failsworth, Manchester. Mr. J. Williams Dunford acted as assistant architect. Mr. E. J. Sherwood, of Queen Victoria-street, London, E.C., was the architect. The entire block covers an area of 12,250 square feet, and the cost has been about 5,570*l*.

CHURCH-BUILDING NEWS.

Brading (Isle of Wight).—The peal of bells belonging to this church has been re-adjusted. No. 5, bearing date 1604, is cast anew, with the addition of 1 cwt. of metal, and four smaller bells are added. The tenor is dated 1594. The flooring, framework, and beams in the belfry have also been repaired, the whole work being carried out by Messrs. Mears & Stainbank, of London, at a cost of about 350*l*.

London.—The foundation-stone of St. Philip's Church, Buckingham Palace-road, was laid on Wednesday last, by Lady Grosvenor, as proxy for her Grace the Duchess of Westminster, who was absent through illness. The parish is to be formed out of St. Michael's, Chester-square. The Duke of Westminster has given the site and 3,000*l*., and it is expected that the Ecclesiastical Commissioners will augment the endowment. The church will consist of nave and chancel, north and south aisles, transepts, and morning chapel, and will accommodate 750 persons. Clergy and choir vestries, to be used also together as a parish room, with organ-chamber over, are arranged on the north side of the chancel. The materials used are Gainsborough bricks for outside facing, with Lawrence's brick strings, &c., and Doulting stones for sills. The core of the walls is of concrete inside, Corsham stone is used for dressings, and the walls are plastered. The roofs are of pitch pine, with boarded ceilings, and covered with Broseley tiles, and there is a flèche, 100 ft. high, above the nave floor, covered with copper at the crossing. The cost of the fabric, exclusive of fittings, is about 6,000*l*. Messrs. Demaine & Brierley, of York, are the architects; Messrs. Macey & Sons, Strand, the contractors; and Mr. T. W. Creed is clerk of works.

Portsea.—On Tuesday, the 9th inst., the Crown Princess of Germany and her three daughters visited Portsmouth to lay the foundation or memorial stone of a new parish church for Portsea. An anonymous donation of 15,000*l*. is given towards the cost of the new structure. This will be on the site of the present parish church of St. Mary, in the tithing of Kingston, where the tower of the original fabric is still standing. The register dates from 1653. In the churchyard is the monument to Admiral Kempenfelt and his "twice four hundred men" who were drowned at Spithead by the capsizing of the *Royal George* on the 29th of August, 1782. Charles Dickens, who was born (1812) in Landport, was christened in this church. The estimated cost of the new church is 40,000*l*., of which three-fourths are already subscribed. It is designed to receive 1,600 persons, and will be built in the Perpendicular style, having a general external facing of flint, with freestone dressings. The architect is Mr. A. W. Blomfield.

Books.

Labour, Leisure, and Luxury; or, Contributions to Present Practical Political Economy. By ALEX. WYLIE. London: Longmans, Green, & Co. 1887.

IT is a good sign of the times that an audience of working people can be got together to listen to dissertations on social politics, as in the case of the Renton Literary Association, near Glasgow, and still more so, when we find that the lecturer is no less than one of the masters of the establishment, which numbers over 2,000 hands. All the same, a series of lectures is not always the better for being raked together into a book, for it is apt to lose its coherence, and read rather disjointedly. Mr. Wylie deals with the alliterative subjects of Labour, Leisure, Luxury (which latter, though very interesting as a chapter, is scarcely suitable for a working-class audience), Progress, and the Acquisition of Property by the Working Classes. One of the best chapters in Mr. Wylie's little book is that on the acquisition of property, in which, after dealing with economy, temperance, thrift, and so on, the keynote is co-operation, and especially as regards building societies. These societies have increased wonderfully of late years. In 1861 there were but 66; while in 1881 there were 1,118 with 6,850,000*l*. capital, so that co-operation has evidently been a great success, and this is more particularly the case with distributive co-operation, the increase in which is marvellous. Mr. Wylie's little work forms a capital book of reference, as it is well studded with statistics from Giffen, Leone Levi, Mullhall, the late Mr. Hoyle, and others, and we can recommend it as one which should be added to every one's library.

Social Arrows. By LORD BRABAZON. London: Longmans, Green, & Co. 1887.

LORD BRABAZON (who has, since the publication of this book, succeeded his father as Earl of Meath) is so well known for his philanthropic views, and, if one may say so, his particular line of philanthropy, that his volume of "Social Arrows" needs but little explanation or apology. On the contrary, it is most interesting, suffering only from the fact that the papers of which it is composed have already appeared in various magazines, and are consequently rather repetitive in their nature. Throughout he deals with the ills to which suffering humanity is heir, especially in our large overgrown towns and cities, and tells us in vivid language to what dangers society is gravitating by carelessness and in allowing such dangers to exist. Lord Brabazon's individual efforts (and successful ones) to provide for the use of the poor, gardens, playgrounds, and open spaces where crowded places only were before, shows what can be done, for he has pioneered one of the most valuable philanthropic movements that the metropolis has ever known. State-directed Colonisation is another "Arrow," the importance of which cannot be over-rated, and from first to last the book is advocating useful works. The last chapter is a strong appeal to men of wealth and leisure to bestir themselves for the common good, and well it deserves to be read and acted upon.

The Blackley National Provident Insurance Scheme: a Protest and an Appeal. By the REV. J. FROME WILKINSON, M.A. London: Swan Sonnenschein, Lowrey & Co. 1887.

THIS little volume is a jeremiad from beginning to end, and a dissertation upon the shortcomings of the Rev. Canon Blackley, who, as all the world knows, is the framer and (pertinacious) proposer of the Compulsory Insurance Scheme. He has, however, apparently met his match in the Rev. Mr. Wilkinson, who, with what success remains to be seen, has taken a great deal of trouble to dissect the Canon's plans, and show how very unreliable they are. In any case, the Canon has a Herculean task before him, for the innate difficulties in themselves are quite sufficient to take up all his attention, even were the attack less uncompromising than it is. But, whoever is right or whoever is wrong, it is a good sign when we see such a grave matter a subject of controversy, for it, at all events, recognises that a great evil exists in our social system which requires rectification; but we must be careful that in creating a remedy we do not fall into a worse condition. We agree with Mr. Wilkinson that it is as impossible to make a people thrifty by Act of Parliament as it is to make them religious; but we ought to be well satisfied with what voluntary effort has already done. One can scarcely imagine it possible to stop 10*l*. out of any wage-earner after 18, whether he likes it or not, especially where the measure is so strongly objected to by the numbers already belonging to friendly societies, but the difficulty will be enhanced a hundredfold when the measure begins to be really worked, and it must infallibly break down by its own weight. At any rate, Mr. Wilkinson's book may be read with a great deal of interest as giving enlightenment on a scheme which, right or wrong, takes high rank in the schemes of the day.

The Pilgrim at Home. By EDWARD WALFORD, M.A., editor of the *Antiquarian Magazine*. London: Society for Promoting Christian Knowledge.

AT this season, when pilgrimages of all sorts are being undertaken (ostensibly in pursuit of health, but practically for recreation's sake), Mr. Walford's little book will be found useful. It may serve to shape the course of a holiday tour, as well as to increase its enjoyment; for we hold, with the author, that a visit to any spot which past events have made famous distinctly helps one to realise with more vividness the events themselves. A recent writer has, indeed, contended that the faculty of association interferes with the simple enjoyment of a work of art, but in most cases it enhances it. The contemplation of a Botticelli may be spoilt by the gaudy frame and surroundings which environ it, or by a recollection of the exorbitant price paid for it; but there is scarcely room for any such disturbing elements when we are looking at the ruins of Kenilworth or standing within the walls of "old Iona's holy fane."

Mr. Walford writes to please all tastes, and shows experience in making his start on very level ground. The scenery of Olney, the little town in Buckinghamshire, where John Newton and William Cowper composed the hymns that bear its name, is about as tame as the hares that frisked around the poet. Who shall say that it had no influence on his verse? "The Task," which Cowper wrote at Weston Underwood, hard by, is full of local allusions, and the features of this place have undergone so little change that at every turn some lines are suggested wherewith to describe the scene.

Glastonbury Abbey takes the tourist much further afield, and into comparatively unknown regions, though the valley of Avalon has at length been invaded by the railway, and the pilgrimage thither can be made without difficulty. It is one which will well repay the student of architecture. Professor Freeman, as a native of Somerset, is anxious that the fullest justice should be done to such an historic site. "It is certain," he says, "that Glastonbury was the one church of first rank in England which stood as a memorial of the British days,—the only one which had lived unscathed through the storm of English conquest, and which received equal reverence from the conquerors and the conquered." But, of course, the church of wicker and timber has long since passed away. It survived the English, Danish, and Norman conquest, but it yielded to the grander conceptions which the Norman architects introduced. For awhile it was permitted to stand beside the stone minster which was erected in the tenth century, but both the one and the other gave place to the noble abbey which dates from the twelfth century. St. Joseph's Chapel,—the fairest fragment that now remains,—was consecrated in 1186, and, with the connecting "Galilee," gave to the great church a length of no less than 580 ft. Nor are these ruins the only objects of interest at Glastonbury. To say nothing of the miraculous thorn, there are two parish churches of considerable beauty, numerous fragments of antiquity around which an old world air still lingers, and such a prospect from the top of Weary All Hill as delights the eye and brings back to the student of Tennyson a thousand recollections. These, indeed, will be still further stimulated if he accompanies Mr. Walford to a more distant and sequestered spot,—Caerleon-on-Usk (Castrum Legionis),—the "*Isca Silurum*" of the Romans, and the city where King Arthur was crowned, and which shared his love with Tintagel, his birthplace, and Glastonbury, where he lies buried. The practical tourist may like to know that Caerleon lies about three miles north of Newport (Monmouthshire), and that, with the exception of the Roman antiquities in the local museum (a most interesting collection), the relics of its past history are unimportant. There are vestiges of the old walls with undoubted Roman masonry; there are indications of an amphitheatre and a few fragments of an early castle, but scarcely anything to remind one that Caerleon was once the capital of Britannia Secunda, and at a later period,—but that as remote as A.D. 182,—the seat of an archbishop. Fairford, Sedgmoor, Lindisfarne, and Abbotsford, are some among the places to which Mr. Walford conducts the reader. All are fraught with memories, while to those of Ufton,—the home of Pope's Belinda,—a special interest has been given by the memory of Bishop Fraser, its sometime rector.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

9,922, Ventilating Window Blinds. Wm. Harte.

This invention is intended to provide for the ventilation of rooms when the window-blinds are drawn down. The blind is hung on the top of the sash, where the roller rests upon brackets. When the sash is lowered, the blind roller goes with it until it reaches the required limit from the top for ventilation. It there unships itself, when it is caught up by and supported upon two other bearings fixed to the window-casings, instead of the sash. The sash may then be lowered to the bottom if required. When the sash is raised again, it lifts the roller in passing off the lower bearers on to the sash brackets, and carries it up with it. The blind is rolled and unrolled in the ordinary way.

10,208, Shoes for Piles and Posts. S. L. Bromhead.

The special feature in this invention is the manufacture in cast metal of hollow pile shoes, with projecting straps for fastening the shoe on to the wood.

10,408, Ventilation of Rooms. J. P. Wilson.

According to this patent, lifting sashes are hung so that one balances the other. A regulator is fixed at one end of each cord to rectify any stretching of the cords. The ordinary sash-weights are dispensed with.

10,625, Tiles for Enclosing Girders, &c. J. D. Denny.

The specification describes method of machinery for manufacture of "Girder Tiles," which are made of moist clay, terra cotta, &c.

10,919, Improvements in Chimney-tops, Cowls, or Ventilators. T. D. Bayliff.

According to the inventor, the wind is guided across the somewhat contracted orifice of the chimney. The cowl is arranged to face the wind, and is detachable for cleaning.

11,266, Hanging Sash Windows. J. H. Jones.

According to this patent, the sash-weight is formed in links or sections to avoid so large a pocket-hole as at present in use. The cord is passed through the frame and knotted, being covered by a small brass plate, which, it is claimed, is an easier and more effective method of securing the cord and the sash.

11,360, Sashes, &c. G. J. Soper, jun.

This invention is intended to be applied to the altering of existing sashes and frames, and in the manufacture of new ones, to allow of the sashes being turned back into the room for cleaning or painting. The sashes are fitted with a screw-pin passing through plates screwed to sash stiles, to the sash-ends of cords are fixed metal eyelets, which are placed on the pins between guard-plates, allowing sashes to reverse freely. The sash stiles are grooved throughout part of face of stile next groove, cut away to depth of groove and rounded to allow line to pass out and in and turn on pin suspended on the cords, thus enabling them to be replaced in frames in a reverse position.

11,435, Temporary Buildings. R. Bucknall.

Roofs, walls and all parts are hollow, and made in sections for convenience in transport, and for warmth or utilising hollow space as cupboard or storage room.

NEW APPLICATIONS FOR PATENTS.

July 29.—10,530, J. James and F. Ransome, Furnaces for Burning Hydraulic Lime, Cement, &c.—10,548, W. Burt and C. Payn, Sliding Window-sashes, Panels, &c.—10,553, W. Kent, Water Meters, &c.—10,556, T. Buck, jun., Brick and Tile Making Machines.

July 30.—10,562, W. Sargent, Flushing and Cleansing Closet Basins, &c.

Aug. 2.—10,608, F. Hemming, Wood Veneers.—10,610, T. Nesbit and T. Forster, White Lead, &c.—10,642, G. Redfern, Preventing the Leakage of Water around Chimney or other Pipes passing through the Roofs of Buildings.

Aug. 3.—10,675, J. Rickerby, Mechanic's Combination Compass and Tool.—10,704, C. Alger, Door Fastener and Indicator.

Aug. 4.—10,726, A. Boult, Privies and Privy Seats.—10,731, A. Boult, Sharpening Attachment for Tools.

PROVISIONAL SPECIFICATIONS ACCEPTED.

8,497, C. Hax, Sharpening Saws.—8,917, T. Truss, Cowls for Chimneys and Ventilating Shafts.—8,586, H. Johnson and T. Wilson, Exhaust Ventilating Cowls.—9,398, J. Jobson, Domestic Fire Grates.—9,435, J. Fox, Latches.—9,593, H. Hansom, Fireplaces.—10,034, R. Smith, Chimney-pots.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to Opposition for Two Months.

10,298, F. Lyte, Manufacture of White Pigment.—12,397, H. Whiteley, Regulating the Opening and Closing of Fanlights, Casements, &c.—12,401, E. Taylor, Opening, Closing, or Fastening Casements, Fanlights, &c.—2,290, E. Young and G. Moss, Fireplaces.—9,246, W. Thompson, Ventilation and Air Moistening.—12,526, R. Baird, Step Ladders.—16,294, H. Bassett, Window Sash Fasteners.—11,454, R. Hunter and J. Turnbull, Kitchen Ranges.

The Student's Column.

LAND SURVEYING AND LEVELLING.

VII.—CIRCULAR PROTRACTOR.

PROTRACTORS are made into various shapes and sizes; the circular forms are the most accurate. The plain circular protractor has its outer circumference bevelled off to a thin edge, and is marked with radial lines indicating degrees and subdivisions of a degree, which are marked off upon paper with a needle point when required for purposes of plotting. The centre of the circle at which the angle is situated is marked upon the centre of the edge of a fixed bar, which crosses the hollow inner space in the instrument, and which is so constructed that the bevelled edge of this bar gives a true line through the centre of the protractor joining the zero point upon the outside edge with the division indicating 180°. In some instruments a revolving arm is fixed so as to project beyond the circumference. One edge of this arm forms a radial line from the centre of the circle, and, when a vernier scale is attached, the arrow or zero point upon the vernier comes upon this radial line. In the best instruments folding arms are attached as shown in fig. 1, and also to a reduced scale in fig. 2. These folding arms can be fixed in any required position by means of the clamp screw marked D. The complete circle is here graduated into degrees and half-degrees, and the verniers read to minutes. The folding arms and apparatus connected with them, to which the verniers are attached, are fixed upon a frame, the whole of which can be made to move when the clamp D is slackened, round the centre of the instrument. The detail of the attachment of the folded arms is shown in the section A A. It will be observed that, instead of the projecting arm lying flat upon the paper, as in the plain form of instruments, a sharp point, marked H, is fixed to the end of each arm, which, by light pressure with the hand, will leave a small hole upon the paper, and the line joining the points so marked by each arm will pass through the centre of the circle, and will correspond in a line with the reading of the instrument. The spring shown in the section A A at the joint of the folding arm with the vernier frame enables the point H to become automatically removed from the drawing-paper directly the required position has been marked and the pressure of the hand above it is taken off. The short marks K upon the inner circumference of the circle are engraved upon bevelled edges, as shown in fig. 1 and the section B B. These are placed so that lines joining them cross one another at right angles through the centre of the instrument. The centre of the instrument is sometimes made of glass with fine lines across it in the direction of the lines K K, and the centre is sometimes engraved upon the bevelled edge of a semicircular piece as indicated at B. In order that the line drawn through the points H H passing through the centre of the instrument may cross the two opposite marks K K at zero and 180°, and be at right angles to the line joining the marks K K at 90° and 270°, when the verniers read zero and 180° respectively, the zero points upon the vernier scales are placed in the centre of each scale.

CIRCULAR PROTRACTOR WITH VERNIER READING TO MINUTES

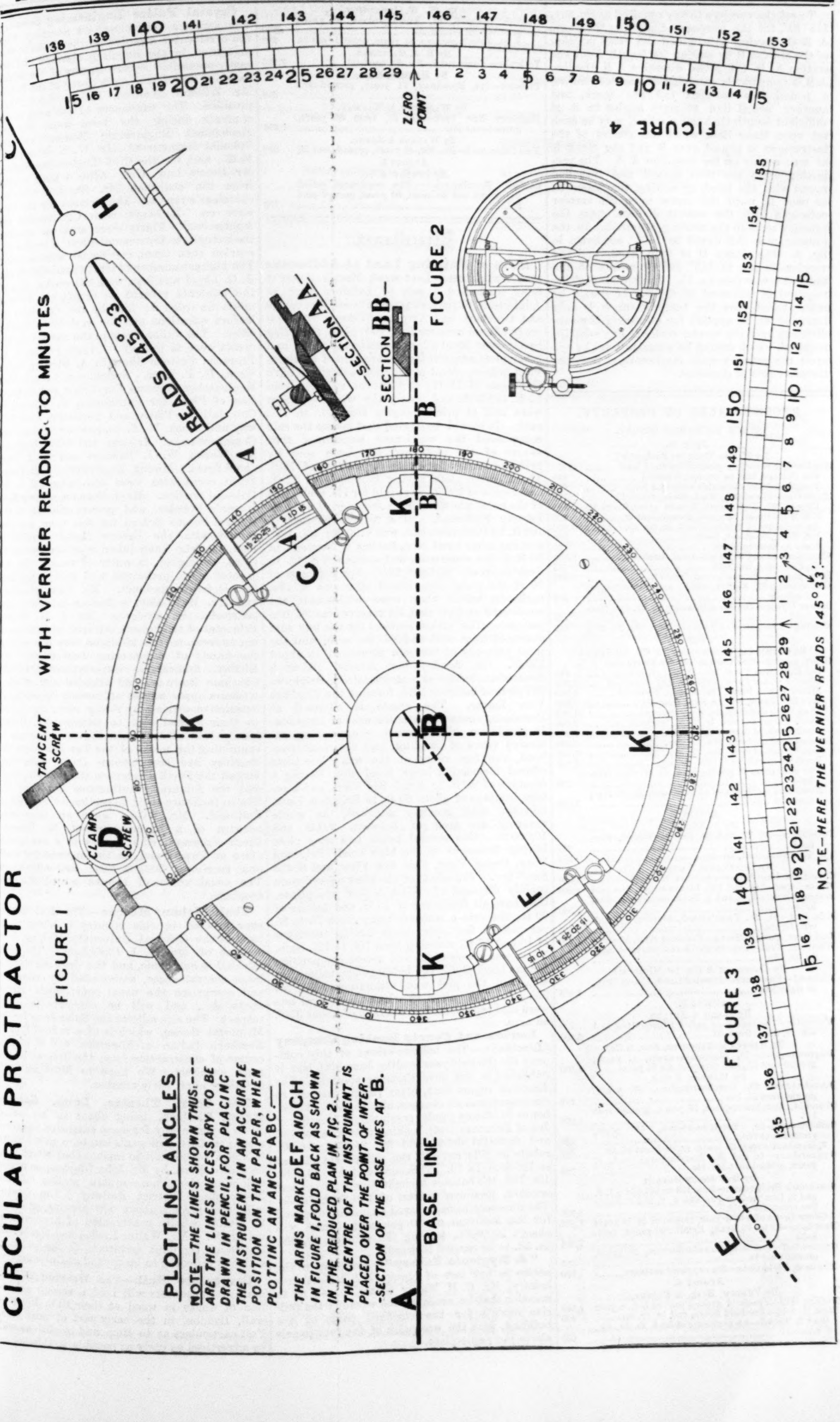
FIGURE 1
TANGENT SCREW
CLAMP SCREW
D
H
C
READS 145° 33
A
K
B
E
F
BASE LINE
A
SECTION AA
SECTION BB
FIGURE 2
FIGURE 3
FIGURE 4
ZERO POINT

PLOTTING ANGLES

NOTE—THE LINES SHOWN THUS.——— ARE THE LINES NECESSARY TO BE DRAWN IN PENCIL, FOR PLACING THE INSTRUMENT IN AN ACCURATE POSITION ON THE PAPER, WHEN PLOTTING AN ANGLE ABC.—

THE ARMS MARKED **EF** AND **CH** IN FIGURE 1, FOLD BACK AS SHOWN IN THE REDUCED PLAN IN FIG 2.— THE CENTRE OF THE INSTRUMENT IS PLACED OVER THE POINT OF INTER-SECTION OF THE BASE LINES AT **B**.

NOTE—HERE THE VERNIER READS 145° 33'.—

To set the verniers to any required angle, say, 145° 33′, for the purpose of plotting the angle A B C: having determined the exact position of the station B by scaling its length from the station A, in the given direction A B, the line A B is temporarily extended in length by ruling a pencil line towards the 180° mark, and another pencil line at right angles to it of sufficient length that the marks K may be each set upon these lines when the centre of the instrument is placed over B and the mark K at zero comes on the base-line A B. The projecting arms are then opened and travelled round with the hand, by moving the frame at or near D, until the arrow upon the vernier coincides with the *nearest* division upon the primary scale to the reading required. In the present case this would be 145½°, as shown in fig. 4. The clamp D is then fixed, and the vernier is set to 145° 33′ by means of the tangent screw (see fig. 1). The actual position required is indicated in fig. 3. It should be remembered that the tangent screw is only intended to be applied for adjusting the subdivisions upon the vernier scales to any *addition* required, which cannot be accurately set by eye upon the primary scale marked upon the continuous circle of divisions.

RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

July 26.	
By Messrs. Cobb (at Rochester).	
Snodland, Kent—Two plots of freehold land	£670
The Cottage, and 4a. 0r. 8p., freehold	850
The freehold blacksmith's shop and forge	550
Rochester—48 and 201, High-street, freehold	1,770
176 and 177, High-street, 7 years, ground-rent 3l.	400
178, High-street, 15 years, ground-rent 2l.	200
An enclosure of freehold land, 7a. 0r. 5p.	4,050
106, Eastgate-street, freehold	380
8 and 9, Railway place	180
Chatham—48 and 50, High-street, freehold	2,000
32, Cage-lane, freehold	145
Brompton—3, Prospect-road, freehold	300
Gillingham—43, Medway-road; and five cottages, freehold	400
Lower Upnor—The Rose Meadow, 2a. 3r. 5p., freehold	220
Cooling—Enclosures of freehold land, 19a. 3r. 25p.	800
July 27.	
By Chinnock, Galsworthy, & Co. (at Leeds).	
Selby, near to—The Carlton Towers Estate:—	
Cat Babbleton Farm, 30a. 1r. 37p., freehold	950
Chester Court Farm, 231a. 1r. 23p., freehold	6,350
Manor House Farm, 76a. 0r. 20p., freehold	3,000
Mill Hill Farm, 52a. 1r. 36p., freehold	1,650
Drax Hall, and 353a. 2r. 35p., freehold	14,000
Castle Farm, and 96a. 1r. 25 p., freehold	2,500
Small freehold farm, 64a. 0r. 23p.	2,600
Small freehold farm, 99a. 0r. 34p.	3,950
Small freehold farm, 78a. 3r. 34p.	2,950
Freehold marsh land, 125a. 0r. 39p.	5,700
Two enclosures of grazing land, 4a. 0r. 22p., freehold	285
Numerous cottages and plots of land, 7a. 3r. 11p., freehold	1,095
August 2.	
By A. Richards.	
Tottenham—16, 17, and 23, Lansdown-road, freehold	575
3, Townsend-road, freehold	275
By Debenham, Tewson, & Co.	
Covent Garden—3, Garrick-street, freehold	3,000
Whitechapel—145 and 147, Leman-street, freehold	2,000
Bethnal Green—1, 4, and 5, Buckhurst-street, freehold	1,040
Mile End—24, St. Peter's-road, 46years, ground-rent 3l. 10s.	250
East Ham, Purley Marsh—Freehold land, 10 acres	1,425
Wrotham, Kent—Two freehold enclosures of land, 4a. 3r. 19p.	360
By Chinnock & Co. (at Midhurst).	
Midhurst—Enclosures of freehold land, 21a. 0r. 28p., in eight lots	4,425
August 3.	
By Slade & Butler.	
Worcester—The residence called Blanquettes, and 43a. 2r. 22p., freehold	6,500
By George Gouldsmith, Son, & Co.	
Belgrave-square—23, Motcombe-street, 41 years, ground-rent 5l., and reversion for 25 years	2,800
By Maddox & Son.	
Dorset-square—29, Dorchester-place, 57 years, ground-rent 5l. 10s.	680
30 and 31, Dorchester-place, 57 years, ground-rent 11l.	1,275
Camden-road—39, Torriano-avenue, 57 years, ground-rent 7l.	480
3, Hartham-street, 69 years, ground-rent 3l. 3s.	350
Gunnersbury—26 and 28, Brandenburgh-road, 77 years, ground-rent 14l. 14s.	780
By B. I'Anson Breach.	
Southwark Bridge-road—Nos. 139 to 145 odd; 7, 8, and 9, Lombard-street; and 5, 6, and 7, South Sea-court, freehold	2,700
Ground-rent of 28l. a year, reversion in 18 years	1,800
Peckham—88 to 98 even, Lyndhurst-grove, freehold	2,295
Camberwell—4 and 6, Crawford-street, 45 years, ground-rent 7l.	555
Mitcham, Field Gate—Six copyhold cottages	370
August 4.	
By Ventom, Bull, & Cooper.	
Notting Hill—Freehold ground-rent of 50l. a year	1,250
West Enfield—Freehold house, and 1a. 0r. 6p.	400
Clay Hill-road—An enclosure of land, 3a. 3r. 4p., freehold	600
By W. W. Jenkinson.	
Kentish Town—9, St. Ann's-gardens, 63 years, ground-rent 6l.	£280
4, St. John's-gardens, 62 years, ground-rent 5l.	280
By E. J. Gairdner.	
Tottenham Court-road—No. 80, freehold	2,210
By Harman Bros.	
Plaistow—114, Broadway, 91 years, ground-rent 5l. 5s.	210
By Wagstaff & Warman.	
Highbury New Park—No. 37, term 62 years, ground-rent 15l.	1,300
By Walker & Runtz.	
New Cross-road—No. 360, 42 years, ground-rent 5l.	340
August 5.	
By Tunley & Co.	
Catford, Bromley-road—The residences called Bracklynn and Belmont, 90 years, ground-rent 25l.	750

Miscellanea.

Sales of Building Land at Addlestone and Brighton.—Last week Messrs. Baker & Sons conducted a sale of building land at Addlestone, Surrey, situated between Weybridge and Chertsey and Virginia Water. The property offered consisted of 154 plots, including two corner hotel sites, several shop plots, and other plots adapted for the erection of medium-sized houses. Most of the plots submitted have frontages of 15 ft., and depths varying from 70 ft. to 90 ft., and nearly the whole of these were sold at prices ranging from 9l. to 11l. each. It should be stated that before the sale commenced the auctioneer announced that twelve of the plots had just been sold by private contract for an aggregate sum of 180l. Three corner plots, having frontages of 17 ft. and depths of 108 ft., were sold for 17l. each. One of the hotel plots, having a frontage of 34 ft. to Liberty Hall-road, and a return frontage of 108 ft. to Conquest-road, was sold for 36l. 10s., and the other hotel plot, having a frontage of 30 ft. to the same road, and a depth of 87 ft. to Peartree-road, realised 25l. For upwards of 30 of the plots, the highest offer was 8l. 15s. each, on which they were withdrawn, the auctioneer stating that his reserve was 9l. 10s. per plot. The prices realised for the lots sold averaged from 400l. to 500l. an acre, and the total proceeds of the sale amounted to about 1,500l. On Monday last Messrs. Baker & Sons submitted for sale at Portslade, Brighton, 107 plots of building land, forming the Brighton View Estate. The estate is situated at Portslade, about three miles west of Brighton. It stands on high ground, commanding extensive views of Brighton and the neighbourhood, also fine views of the sea. The plots offered included a large hotel site, having a frontage of 40 ft. to South Sea View, and a return frontage of about 60 ft. to Brighton View, together with grounds attached, the whole covering an area of between 9,000 and 10,000 ft. Also several house and shop plots having frontages to the high road, Brighton View, Ocean View, Fair Sea View, and South Sea View. The whole of the plots offered were rapidly disposed of. With a few exceptions, they have all frontages of 15 ft. and depths of 60 ft., the prices realised being from 7l. to 8l. per plot; a few other plots, having frontages of 16 and 17 ft. realising from 10l. to 12l. each. There was a very close and severe competition for the hotel plot. The biddings commenced at 40l., and the plot was ultimately sold for 92l. 10s. The prices at which the several lots were sold represented an average of about 350l. an acre.

London and County Banking Company (Limited).—The balance-sheet of this company for the half-year ending June 30th last is published in our advertisement columns. The directors report that, after paying interest to customers, and all charges, also 23,660l. 13s. 9d. bonus to officers (under resolution of Meeting of 3rd of February last), making provision for bad and doubtful debts, and for 24,435l. 3s. 3d. rebate on bills not due, the net profits amount to 185,689l. 7s. 7d. This sum, added to 33,598l. 19s. 10d., the balance brought forward from last account, produces a total of 219,288l. 7s. 5d. The directors have declared an interim dividend for the half-year of 10 per cent., which will absorb 200,000l., leaving the sum of 19,288l. 7s. 5d. to be carried forward.

"**A Hygienic Bakery**."—Referring to the notice in our last of Messrs. Hill & Sons' new bakery, Mr. C. H. Mabey writes to ask us to mention that he executed the whole of the full-size models for the enriched parts of the building, with the exception of the four panels above the name-plate.

Crystal Palace Engineering School.—The summer term closed on Saturday, when the certificates awarded to the students were presented in the singularly-elevated and not easily-accessible lecture theatre of the school, near the top of the south tower of the Palace. Mr. William Shelford, F.G.S., F.S.S., C.E., presided. The examiners of the work of the students during the term were, for the Mechanical Engineering Section and the Colonial Department, Mr. W. N. Colam, C.E., M.E.; and, for the Civil Engineering Section, Mr. Henry Law, C.E. After a short address from the chairman Mr. Shenton read the examiner's report. The lectures for the term were on "Railways, their Construction and Appliances." Thirty-three students attended the lectures, to fourteen of whom, a smaller proportion than usual, certificates were awarded. The highest number of marks attainable is 268. B. G. Lloyd was first, with 224 marks. One of the students refused to accept the order of merit awarded to him by the examiners for lecture questions and for work in the drawing office. The other firsts in the various departments were as follows:—Drawing Office, A. W. Pearson; Pattern Shop, E. A. Glover; Fitting Shop, H. P. Miles. Second year's course Civil Engineering, General Surveying, and Preparation of Plans for Parliament, E. J. Bowman; Calculations, Plans, and Estimates for a Railway and Dock, W. E. Underwood; Design and Construction of Existing and other Engineering Works, W. J. Bowman and E. J. Prew, equal firsts. Mining Engineering, J. H. Chute. Eight certificates were also awarded in the Colonial Section. Mr. J. Bosman, a Hong Kong Queen's Scholar, and *primus* student at the Crystal Palace School for this term, was presented with the Bronze Medal awarded to students who have taken nine certificates, all third, or higher, in order of merit. He was greeted with prolonged and hearty applause by his fellow-students. Mr. Law, examiner, and Mr. Walmisley, a former examiner, also addressed the students. Mr. J. W. Wilson, Principal of the School, referred, in an interesting address, to the kindness they met with at the hands of engineering authorities. Mr. Kirtley, Locomotive Superintendent of the Chatham Railway, had afforded 400 of their students opportunities of learning something of locomotive driving by riding upon the engine. In their annual visit to Dundee Mr. Barlow kindly told off a steam tug for their use in examining the works of the Tay Bridge; a like courtesy had been shown them when they visited the Forth Bridge on the following day; and the Admiralty authorities had done the like to facilitate their inspection of the fort at Spithead. Mr. Wilson gave an interesting account of a former student, Mr. Thomas Birch Freeman, who is now in a responsible office at Cape Coast, on the engineering staff, and receiving 300l. a year and allowances. The usual votes of thanks closed the proceedings.

Shah Jehan Mosque.—The first mosque ever erected in this country is about to be built at the Oriental University, Woking, from designs of Mr. W. I. Chambers. The style selected is Saracenic, and the drawing shows a large central dome, surrounded by minarets, and comprises the usual court-yards, sacred tanks, &c., and will be complete in every respect. The site adjoins the Salar Jung Indian Memorial House, which is of a refined type of Northern Indian architecture, and is now in course of construction from the designs of the same architect. We hope to illustrate both buildings in an early number.

The Court Theatre, Lower George-street, Chelsea, being about to be pulled down to make way for some extensive improvements on Lord Cadogan's estate, a new theatre is about to be built to replace that which is to be pulled down, by Mr. John Clayton, on a site adjoining the Sloane-square station of the Metropolitan District Railway. The theatre will accommodate about 800 persons, and will be almost wholly constructed of fire-resisting materials. Mr. Walter Emden and Mr. W. R. Crewe are the joint architects of the building, which is proposed to be opened at Christmas.

Carpenters' Hall.—The Worshipful Company of Carpenters will hold a second exhibition of works in wood at their Hall, London-wall, London, in the early part of next year. Full particulars as to time and conditions will be advertised as early as possible in October.

Beaumaris Sewerage. — The dispute between the contractors and the Beaumaris Town Council has ended in an arbitrator being appointed by the Court of Queen's Bench. The gentleman selected is Mr. Edward Pritchard, C.E., who will shortly proceed with the reference in Beaumaris. The plaintiffs in this case are Messrs. John Hughes and Charles Lancaster, of Chester and Liverpool.

Sanitary Institute of Great Britain.—We have received the preliminary programme of the tenth Autumn Congress, of this Institute, which is to be held at Bolton from September 20th to September 24th. The Health Exhibition, including sanitary apparatus and appliances, in connexion with the Congress, will be held in the Drill Hall and special building, Silverwell-street, from September 20th to October 15th.

PRICES CURRENT OF MATERIALS.

TIMBER.	£.	s.	d.	£.	s.	d.
Greenheart, B.G. ton	5	10	0	7	10	0
Teak, E.I. load	8	10	0	13	0	0
Sequoia, U.S. foot cube	0	2	3	0	3	0
Ash, Canada load	3	0	0	4	10	0
Birch ,,	2	0	0	3	10	0
Elm ,,	3	10	0	4	10	0
Fir, Dantsic, &c.	1	10	0	4	0	0
Oak ,,	2	10	0	4	10	0
Canada	3	0	0	6	0	0
Pine, Canada red	2	0	0	3	10	0
,, yellow	2	0	0	4	0	0
Lath, Dantsic fathom	3	0	0	5	0	0
St. Petersburg	4	0	0	5	10	0
Wainscot, Riga log	0	0	0	0	0	0
,, Odessa, crown	2	10	0	3	0	0
Deals, Finland, 2nd and 1st...std.100	7	0	0	8	0	0
,, 4th and 3rd	5	10	0	6	10	0
Riga	5	10	0	7	0	0
St. Petersburg, 1st yellow	8	0	0	13	0	0
,, 2nd ,,	7	0	0	8	0	0
,, white	6	10	0	8	10	0
Swedish	0	0	0	0	0	0
White Sea	0	0	0	0	0	0
Canada, Pine, 1st	16	0	0	24	0	0
,, ,, 2nd	10	0	0	15	0	0
,, ,, 3rd, &c.	6	0	0	9	0	0
,, Spruce, 1st	8	0	0	9	0	0
,, ,, 3rd and 2nd	5	0	0	7	0	0
New Brunswick, &c.	5	0	0	6	10	0
Battens, all kinds	4	0	0	10	10	0
Flooring Boards, sq., 1 in., prepared, First	0	8	0	0	11	0
Second	0	6	6	0	7	6
Other qualities	0	4	0	0	6	0
Cedar, Cuba foot	0	0	3½	0	0	3½
Honduras, &c.	0	0	3	0	0	3½
Australian	0	0	2	0	0	3
Mahogany, Cuba	0	0	4	0	0	6
St. Domingo, cargo average	0	0	4	0	0	5½
Mexican ,,	0	0	3½	0	0	3½
Tobasco ,,	0	0	3½	0	0	5
Honduras ,,	0	0	3½	0	0	5
Maple, Bird's-eye	0	0	5	0	0	7
Rose, Rio ton	8	0	0	11	0	0
Bahia	7	0	0	9	0	0
Box, Turkey ton	5	0	0	12	0	0
Satin, St. Domingo foot	0	0	5	0	0	9
Porto Rico	0	0	6	0	0	10
Walnut, Italian	0	0	3½	0	0	5½

METALS.	£.	s.	d.	£.	s.	d.
Iron—Bar, Welsh, in London...ton	4	7	6	4	15	0
,, ,, in Wales	4	2	6	4	7	6
,, Staffordshire, London	5	10	0	6	0	0
Sheets, single, in London	6	15	0	8	10	0
Hoops ,,	6	0	0	7	0	0
Nail-rods ,,	5	15	0	6	10	0
Copper—						
British, cake and ingot ton	43	10	0	44	0	0
Best selected	44	10	0	45	10	0
Sheets, strong	50	0	0	0	0	0
Chili, bars	39	19	0	40	7	6
Yellow Metal lb.	0	0	0	0	0	0
Lead—						
Pig, Spanish ton	12	1	3	0	0	0
English, common brands	12	7	6	0	0	0
Sheet, English	13	6	3	13	11	3
Spelter—						
Silesian, special ton	14	12	6	14	15	0
Ordinary brands	14	10	0	14	12	6
Tin—						
Straits ton	105	0	0	0	0	0
Australian	104	15	0	0	0	0
English ingots	108	0	0	0	0	0
Zinc—						
English sheet ton	0	0	0	0	0	0

OILS.	£.	s.	d.	£.	s.	d.
Linseed ton	20	7	6	20	10	0
Cocoanut, Cochin	30	0	0	33	0	0
Ceylon	24	0	0	0	0	0
Palm, Lagos	20	10	0	0	0	0
Rapeseed, English pale	22	5	0	23	10	0
,, brown	21	15	0	22	0	0
Cottonseed, refined	20	15	0	0	0	0
Tallow and Oleine	25	0	0	45	0	0
Lubricating, U.S.	5	0	0	6	0	0
,, refined	5	0	0	12	0	0
Turpentine—						
American, in casks cwt.	1	5	9	0	0	0
Tar—						
Stockholm barrel	0	14	0	0	14	6
Archangel	0	9	6	0	10	0

COMPETITIONS, CONTRACTS, & PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

COMPETITIONS.

Nature of Work.	By whom required.	Premium.	Designs to be delivered.	Page.
Swimming, Private, and Turkish Baths	Gloucester Cor.	50*l*. and 25*l*.	October 1st	ii.

CONTRACTS.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Renewal of Two Draw-Bridges	War Department	*Official*	August 20th	ii.
Collection of Refuse	Tottenham Local Board	do.	August 23rd	ii.
Wood Fencing	East Cowes Local Board	J. R. Mann	do.	ii.
Wrought-Iron Railing	do.	do.	do.	ii.
Taking Down and Rebuilding Bridge	Kent Justices of the Peace	F. W. Ruck	do.	ii.
Oak Park Fencing	Gt. Yarmouth Town Cl.	J. W. Cockrill	August 24th	x.
Four Beam Pumping Engines	Leicester Corporation	*Official*	August 25th	ii.
New Church, Acton Green		E. Monson, Jun.	do.	x.
Building Nursing Institute, Taunton	Hospital Committee	J. Houghton Spencer	August 26th	ii.
Various Works to Workhouse Buildings	Cheltenham Union	— Darby	August 30th	ii.
Cast-Iron Outfall Sewer	Lymington Local Board	J. Lemon	do.	ii.
School, Caretaker's House, &c.	Burton-on-Trent Sch. B.	R. Churchill	Sept. 1st	x.
Sewers, Deposit Tanks, &c.	Ashford Local Board	*Official*	Sept. 7th	ii.
Construction of Reservoir	Belper Union	— Blackwell	Sept. 8th	ii.
Formation of Footpaths, Fencing, &c.	Met. Board of Works	*Official*	October 4th	ii.
Enlargement of School	Schl. Board for London	do.	Not stated	x.
Boundary-Wall and Making-up Roadway, &c.	Willesden Paper Works		do.	x.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.	Page.
Private Drainage Inspector	West Bromwich Cor.	100*l*. per annum	August 25th	xiv.
Diocesan Surveyor	Bristol	Not stated	August 27th	xiv.

TENDERS.

ASHTON-UNDER-LYNE.—For alterations to warehouse, for Mr. W. Brown. Mr. J. H. Burton, architect, Ashton-under-Lyne :—

R. H. Booth, Stalybridge	£385	8	10
Marland & Myles, Ashton-under-Lyde	377	12	7
John Robinson, Ashton-under-Lyne	333	15	0
Allen Holmes, Ashton-under-Lyne	313	19	6
Castle Hall Saw Mills Co., Stalybridge	313	15	0
Thomas Suddaby, Ashton-under-Lyne	3 9	19	6
Aaron Marsden, Ashton-under-Lyne	304	10	0
J. W. Williamson, Ashton-under-Lyne (accepted)	301	14	6
Thomas Dean, Ashton-under-Lyne	294	11	9

AUDENSHAW.—For laying 12-in. earthenware pipe sewer in Audenshaw-road, from Cross Gate to near the London and North-Western Railway bridge, for the Audenshaw Local Board. Mr. J. H. Burton, surveyor, Ashton-under-Lyne :—

W. Mountain, Salford	£270	0	0
James Charlesworth, Ashton-under-Lyne	242	10	0
Marland & Myles, Ashton-under-Lyne	222	12	9
Worthington & Pownall, Manchester	191	3	0
Charles Walmsley, Audenshaw	170	0	6
Robert Irwin, Ashton-under-Lyne*	150	0	0

[Surveyor's estimate, 208*l*. 15s.]

* Accepted.

AUDENSHAW.—For laying a 24-in. by 16-in. brick culvert and a 12-in. earthenware pipe sewer in Audenshaw-road, from near the London and North-Western Railway bridge to Trail Dog Bridge, for the Audenshaw Local Board. Mr. J. H. Burton, surveyor, Ashton-under-Lyne:—

W. Mountain, Salford	£816	12	8
Marland & Myles, Ashton-under-Lyne	555	12	6
Worthington & Pownall, Manchester	546	15	0
James Charlesworth, Ashton-under-Lyne	490	0	0
Charles Walmsley, Audenshaw	475	15	4
Robert Irwin, Ashton-under-Lyne*	395	10	0

[Surveyor's estimate, 454*l*. 18s. 4d.]

* Accepted.

BARNES.—For alterations and repairs to the Boileau Arms public-house, Barnes. Mr. J. G. Needham, architect, Lower Clapton :—

J. Chappell, Pimlico	£1,414	0	0
A. Sale, Barnes	1,385	0	0
G. Warner, Hackney	1,331	0	0
F. & C. Collin, Barnes	1,310	0	0
J. Walker, Limehouse (accepted)	1,150	0	0
Pewtering.			
Phillips	£98	0	0
Skinner	96	0	0
Warner (accepted)	94	0	0
Gasfitting.			
Lowe & Son, Barnes (accepted)	£85	0	0
Steadman	80	0	0

BIRMINGHAM.—For the extension of the Aston Workhouse. Messrs. Dunn & Hipkiss, architects :—

J. Moffat, Birmingham	£16,291	0	0
S. Surman, Birmingham	16,180	0	0
W. J. Webb, Birmingham	15,776	0	0
J. Mallin, West Bromwich	15,743	0	0
W. Sapcote & Sons, Birmingham	15,352	0	0
W. Bloore, Aston	15,280	0	0
W. Bissell & Sons, Birmingham	14,985	0	0
J. Harley & Son, Smethwick	14,975	0	0
J. Wilson & Son, Handsworth	14,971	0	0
J. Smith & Sons, Birmingham	14,958	0	0
Jeffery & Son, Birmingham	14,890	0	0
W. Robinson, Birmingham	14,763	0	0
S. Taylor, Birmingham	14,705	0	0
J. Rowbotham, Birmingham	14,695	0	0
J. Garlick, London	14,490	0	0
J. Barnsley & Sons, Birmingham	14,314	0	0
Barker & Son, Handsworth	14,200	0	0
J. Hughes, Handsworth	13,955	0	0
H. Willcock, Wolverhampton*	13,477	0	0

* Accepted.

BOURNEMOUTH.—For additions to The Pines, Winton, for Messrs. Eldridge, Pope, & Co. Messrs. Kemp-Welch & Pinder, architects :—

Francis, Winton (accepted)	£155	0	0

BOURNEMOUTH.—For additions and repairs to Ecclesburn and stables, Manor-road, for Mr. J. Roberts Thomson, M.D. Messrs. Kemp-Welch & Pinder, architects :—

George & Harding	£315	0	0
Jenkins & Sons (accepted)	267	0	0

BOURNEMOUTH.—For the election of a club room at the South-Western Hotel, for Messrs. Eldridge Pope & Co. Messrs. Kemp-Welch & Pinder, architects :—

F. Walden	£399	0	0
J. Hards	389	0	0
A. H. Stroud	360	0	0
S. B. Morse	350	0	0
G. H. Rolls (accepted)	332	0	0

CHESTER.—For re-pewing the Methodist New Connexion Chapel, Pepper-street, Chester. Mr. J. H. Burton architect, Ashton-under-Lyne :—

George Forester, Chester	£391	0	0
William Parrott, Chester	386	12	0
Henry Pearson, Chester	330	0	0
Reuben Jones, Chester	309	6	0
John Mayers, Chester	288	4	0
G. & H. Wright, Kelsall (accepted)	208	13	2

[Architect's estimate, 310*l*.]

Painting.			
William Pritchard, Chester	£43	0	0
James Priddey, Chester	35	3	6
Issac Watkin, Chester (accepted)	29	15	0

CHRISTCHURCH (Hants).—For erection of the White Hart Hotel, for Messrs. Eldridge, Pope, & Co. Messrs. Kemp-Welch & Pinder, architects, Bournemouth :—

J. Groke, Moordown	£1,823	9	3
F. Walden, Christchurch	1,698	10	9
A. H. Stroud, Bournemouth	1,698	10	0
W. Stanley, Bournemouth	1,697	0	0
G. James, Bournemouth	1,675	0	0
Davis & Lambert, Bournemouth	1,658	0	0
G. Walden, Bournemouth	1,629	0	0
Jenkins & Sons, Bournemouth	1,600	0	0
J. B. Hyde, Christchurch	1,597	8	0
G. H. Rolls, Bournemouth*	1,490	0	0

* Accepted.

CLACTON-ON-SEA.—For two houses and shops at Clacton-on-Sea, for Mr. G. Moore. Mr. T. A. Cressy, architect :—

Demaid	£850	0	0
Allen	825	0	0
Diss	750	0	0
Day	733	0	0
Dupont	611	0	0
Chambers	598	0	0
Hook (accepted)	587	0	0

CLAPHAM.—For sundry works to be done at The Lawn, Clapham Common, for the Girls' Public Day School Company, Limited. Mr. J. Osborne Smith, architect :—

H. & C. Davis & Co.	£112	0	0
Exton & Burton	91	0	0
W. H. McLachlan	74	0	0
Barrett & Power	70	0	0

DEPTFORD.—For the enlargement of the Deptford Lower-road School (Greenwich A^3) by 400 places, for the School Board for London. Mr. T. J. Bailey, architect :—

S. J. Jerrard	£4,289	0	0
Stimpson & Co.	4,200	0	0
H. Hart	4,168	0	0
J. Holloway	4,166	0	0
C. Wall	4,094	0	0
H. L. Holloway	3,993	0	0
Atherton & Latta*	3,829	0	0
W. Johnson†	3,149	0	0

* Recommended by the Works Committee for acceptance.

† Withdrawn, owing to error in casting.

DENTON.—For the erection of stables for eighteen horses, for the Denton Colliery Company, Denton. Mr. J. H. Burton, architect, Ashton-under-Lyne:—

Z. Pike, Hooley Hill	£960	0	0
J. Davison, Manchester	822	0	0
J. Lowe, Hooley Hill	766	7	0
Castle Hall Saw Mills Co., Stalybridge	765	0	0
Marland & Myles, Ashton-under-Lyne	750	0	0
John Clayton, Denton	732	5	0
John Brown & Co., Hyde	716	0	0
Thomas Storer, Denton	716	0	0
John Rose, Manchester	713	0	0
Thomas Dean, Ashton-under-Lyne	704	15	0
John Lee, Portwood	680	0	0
J. W. Williamson, Ashton-under-Lyne	674	0	0
Allen Holmes, Ashton-under-Lyne*	674	0	0
John Robinson, Ashton-under-Lyne	656	0	0
Brown & Worthington, Dukinfield	647	15	7

* Accepted.

FINSBURY.—For erecting a dwelling-house and shop in Leonard-street, Finsbury, for Mr. George Newland. Charles E. Jackson, architect, Grove-road, E.:—

C. Barnes, Ilford	£1,368	0	0
C. Everard, Stratford	1,317	0	0
Coulsell Bros., Bethnal Green	1,315	0	0
Staines & Son, Finsbury	1,244	0	0
J. Bartram, Hackney	1,145	0	0
Jesse Chessum, Finsbury (accepted)	1,100	0	0

FOREST GATE.—For the erection of three dwelling-houses and shop in the Vansittart-road, Forest Gate, for Mr. R. J. Ames. Charles E. Jackson, architect:—

J. Bartram, Hackney (accepted)	£600	0	0

FOREST GATE.—For alterations and repairs to 240, Romford-road, Forest Gate, Essex. Mr. J. G. Needham, architect, Lower Clapton:—

J. Walker	£280	0	0

[No competition.]

GROOMBRIDGE (Kent). — For the erection of parsonage, Groombridge, Kent, for the Rev. J. Parker. Mr. Charles Bell, architect. Quantities by Mr. H. Lovegrove, 26, Budge-row, E.C.:—

Peat	£2,840	0	0
Sawle	2,592	0	0
Thurston	2,452	0	0
Jarvis	2,360	0	0
Moon & Son	2,349	0	0
Beale & Son	2,339	0	0
Constable	2,295	0	0
J. & C. Bowyer	2,268	0	0
G. H. Denne & Son	2,226	0	0
Longley	2,174	0	0
G. J. Jones	2,150	0	0
S. Sabey & Son	2,098	0	0
Punnett & Son	2,072	0	0
Comfort	2,065	0	0
Dore & Sons	2,050	0	0
Baker	2,043	0	0
Henley & Co.	1,977	0	0
Hale	1,958	0	0
Stanbridge & Tupple	1,950	0	0
Davies & Leaney	1,945	0	0
Brown & Co.	1,940	0	0
Cornwell	1,900	0	0
Harris	1,850	0	0
Ingram	1,8[illegible]6	0	0
W. & H. Castte	1,757	0	0
Jno. Harman, Rotherfield	1,651	0	0

HAMPSTEAD. — For sundry works at Maresfield-gardens, South Hampstead, for the Girls' Public Day School Company (Limited). Mr. J. Osborne Smith, architect:—

W. H. McLachlan	£378	0	0
Exton & Burton	369	0	0
Thomas Gregory & Co.	360	0	0

HARROW.—For new fire engine station and offices, for the Harrow Local Board. Mr. Charles Forster Hayward, architect. Quantities supplied by Mr. T. Marcus Houghton, Ludgate-circus:—

Wall	£2,235	0	0
Bloomer	2,234	0	0
Dabbs	2,233	0	0
Mash	2,178	0	0
Rindell	2,143	0	0
Kirk Bros.	2,130	0	0
Haynes	2,129	0	0
Turtle & Appleton	2,071	0	0
Newton & Idle	2,057	0	0
Goodwin	2,009	0	0
Brown	1,992	0	0
Addis	1,621	0	0

ISLEWORTH.—For erecting a public hall and additions to the Isleworth Free Library, to commemorate Her Majesty's Jubilee. Mr. Stephen Woodbridge, jun., architect, High-street, Brentford. Quantities by Messrs. Gardiner, Son, & Theobald:—

J. Bloomer, Brentford	£2,860	0	0
W. Wisdom, Isleworth	2,825	0	0
C. Wall, Chelsea	2,750	0	0
H. Knight, Morden, Surrey	2,700	0	0
G. M. Goodwin, Kilburn	2,692	13	6
G. Danels, Hounslow (too late)	2,655	0	0
A. H. Harris, Sutton, Surrey	2,600	0	0
T. Hiscock, Hounslow	2,600	0	0
J. & C. Bowyer, Upper Norwood	2,596	0	0
J. T. Collinson, Teddington	2,595	0	0
Priestly & Gurney, Hammersmith	2,560	0	0
Nightingale, London	2,540	0	0
R. & E. Evans, Peckham	2,494	5	0
J. Barnes, Brentford	2,493	0	0
J. Dorey, Brentford	2,489	0	0
Stanbridge & Tupper, Eastbourne	2,423	0	0
P. H. Daws, Westminster	2,399	0	0
A. E. Addis, Hounslow	2,353	0	0

LEEK.—For additional staircase and new gallery to Town-hall. Messrs. W. Sugden & Son, architects, Leek:—

	Section A	Section B	Section C
Nathan Barlow, Stoke-on-Trent Contract 1 (accepted)	£538	£407	£652
Sampson Salt, Leek:— Contract 2 (accepted)	130	136	147
M. Carding, Leek:— Contract 3 (accepted)	49	49	67

LEEK.—For boat-house and fishing-lodge at Rudyard Lake, for Messrs. H. & G. Davenport. Messrs. W. Sugden & Son, architects, Leek:—

Fielding, Alton (accepted)	£315	0	0

LONDON. — For alterations and additions to the Magpie and Punchbowl, Bishopsgate-street Within, for Mr. H. H. Finch. Messrs. Hammack & Lambert, architects:—

David Brown & Co.	£3,595	0	0
David King & Son	3,515	0	0
Lucas & Son	3,397	0	0
Williams & Co.	3,282	0	0
Johnson & Co.	3,157	0	0
Drew & Cadman	3,138	0	0

LONDON.—For the erection of new stables, 114, Brompton-road:—

King Bros. & Co.	£1,098	0	0
Lansdown & Co.	1,087	0	0
Miskin	1,065	0	0
Manktelow	1,000	0	0
Gregory & Co.	995	0	0
Stimpson & Co.	978	0	0
Lowe	968	0	0
G. Stephenson	963	0	0
Craske	953	0	0
Newton & Idle	893	0	0
Garlick, Hans-place, Chelsea*	880	0	0

* Accepted.

LONDON.—For alterations at No. 49, Bow-lane, Cheapside. Mr. C. Innes, architect:—

Ramsey	£444	0	0
Macey & Sons	438	0	0
Prestige & Co.	437	0	0

LONDON.—For alterations to part of warehouse, 90 and 92, Wigmore-street, and subway under Duke's-mews, for Messrs. Lazenby. Mr. F. M. Elgood, architect. Quantities supplied:—

Thomas Boyce	£320	0	0
J. Styles & Son	307	0	0
George Shaw	290	0	0
Stimpson & Co.	287	0	0
John Woodward	246	0	0
Hall, Beddall, & Co. (accepted)	238	0	0

LONDON.—For the erection of cookery centres on the undermentioned sites, for the School Board for London. Mr. T. J. Bailey, architect:—

Biscay-road (Chelsea T¹).			
T. Bendon	£371	0	0
W. Johnson	343	0	0
J. Channon*	297	0	0
Edinburgh-road (Chelsea AD¹).			
G. Wilkinson & Sons	£415	0	0
W. Johnson*	383	0	0
Morden-terrace (Greenwich W).			
W. Johnson	£386	0	0
H. L. Holloway*	346	0	0
Crawford-street (West Lambeth P).			
H. L. Holloway	£376	0	0
W. Johnson*	368	0	0

* Recommended by the Works Committee for acceptance.

LONDON.—For reseating, alterations, and decorations at St. Peter's Church, Saffron-hill, E.C. Mr. J. Douglass Mathews, architect:—

Dove	£1,365	0	0
Priestley & Gurney	1,178	0	0
Grover	1,030	0	0
Roberts	947	0	0

ST. GEORGE-IN-THE-EAST. — For fireplaces in nurses' rooms and two new bath rooms in the "Stone Building" of the workhouse, Old Gravel-lane, E., for the Guardians of the Poor. Messrs. Wilson, Son, & Aldwinckle, East India-avenue, Leadenhall-street, architects:—

John Mills	£298	0	0
Joseph Holland	296	0	0
Charles Cox (accepted)	260	0	0

STREATHAM.—For houses and shops, Streatham Common. Messrs. Thomas & Wm. Stone, architects, Great Winchester-street, London Wall, E.C.:—

F. G. Higgs	£2,950	0	0
G. J. Smith	2,620	0	0
G. W. Beale	2,521	0	0
Bassett & Sons	2,460	0	0
Gregar	2,333	0	0
Hill Bros.	2,270	0	0
H. Gatfield	2,145	0	0
A. Aldridge	1,720	0	0

TOOTING.—For the erection of nine houses, Earl's-park, Upper Tooting, for Mr. G. R. Chamberlain. Mr. John Job Wood, architect and surveyor:—

Livett	£2,575	0	0
Boon	2,469	0	0
Parker	2,362	0	0
Wood	2,345	7	0
Ellacott (accepted)	2,245	10	0

WALWORTH. — For rebuilding iron warehouse in Brandon-street, Walworth. Messrs. Charles J. & C. Herbert Shoppee, architects:—

W. H. T. Kelland	£1,720	0	0
German & Graves	1,622	15	7
G. Parker	1,438	0	0
J. Marsland	1,428	0	0
F. Tarrant	1,393	0	0
E. Lawrance & Sons	1,392	0	0
Balaam Bros.	1,370	0	0
C. F. Kearley	1,361	0	0
B. E. Nightingale	1,329	0	0
W. Downs	1,305	0	0
H. Burman & Sons	1,297	0	0
A. & E. Braid	1,260	0	0
W. Stubbs (accepted)	1,232	0	0

WALWORTH.—For the erection of additional staircases to the Beresford-street School (East Lambeth G), for the School Board for London. Mr. T. J. Bailey, architect:—

S. J. Jerrard	£809	0	0
W. Johnson*	785	0	0

* Recommended by the Works Committee for acceptance.

⁂ SPECIAL NOTICE. — Lists of Tenders frequently reach us too late for insertion. They should be delivered at our office, 46, Catherine-street, W.C., not later than 12 Noon on THURSDAYS.

TO CORRESPONDENTS.

Registered Telegraphic Address, "The Builder, London."

G. N. (address noted).—National Association of Master Builders of Great Britain (meeting apparently held on 20th July. Brief report not sent to us till August 6th. If those concerned in sending the report are so dilatory, they can hardly be in earnest in desiring its publication).—J. N. C.—A. H.—"Aquarius" (we cannot print or reply to letters unless name and address are sent—not, of course, necessarily for publication).—S. P. and S.—B. B.—W. A. P.—S. & Co. —J. N.—C. S.—R. B. & Son.—B. F.—E. K.—M. H. J.—T. L. W. (we can hardly commence a correspondence on the military or strategical aspect of the question. We referred to it *en passant*, but to go into it further would be rather going out of our province).—R. K. F.—P. T. (people who are not lunatics are quite aware that it is the steam and not the water that causes the explosion).—"Ferrum" (we will endeavour to give you an answer next week. It is a kind of query which it is not easy to answer without a good deal of trouble). —B. & M. (should send amounts).—A. W. & Co. (next week).

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news-items) which have been duplicated for other journals, are NOT DESIRED.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; all communications relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

Best Bath Stone.
CORSHAM DOWN. | FARLEIGH DOWN.
BOX GROUND. | COMBE DOWN.
WESTWOOD GROUND. | STOKE GROUND.
RANDELL, SAUNDERS, & CO., Ld.,
Corsham, Wilts.

Bath Stone.
Pictor's Monks' Park. Combe Down.
Corsham Down. Stoke Ground.
Box Ground. Winsley Ground.
Farleigh Down. West Wood.
PICTOR & SONS, Box, Wilts. [Advt.

Doulting Freestone.
THE CHELYNCH STONE. The stone from these quarries is known as the "Weather Beds," and is of a very crystalline nature, and undoubtedly one of the most durable stones in England.
THE BRAMBLEDITCH STONE. Is of the same crystalline nature as the Chelynch Stone, but finer in texture, and more suitable for fine moulded work.
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